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*Sanitary Architecture and Appliances.**

IT is sometimes urged, mostly by persons not fully acquainted with the scope and proceedings of the Social Science Association, that at its congresses matters are discussed which are not reducible to laws, doubts that cannot be determined, caprices rather than science; and that, after a great deal of talking and writing, little is removed from the cloud-land of "I think," to the permanent domain of "I know." If the proceedings of any of the departments did offer foothold to such an objector, he would not find it here, in the midst of the exhibition of sanitary, educational, and domestic appliances organised (and organised annually), in connexion with the Congress of the Association. Here we are beyond theories and scarcely entertain doubts: here we have to deal only with facts, facts which concern all, facts which include life and death.

The exhibition is arranged under six headings, and it is of the third of these that I have been requested to speak. It runs thus:—"Sanitary architecture, and appliances, for outward and interior ornamentation, including cisterns, lavatories, baths, closets, filters, fountains, indicators, paving and roofing materials, ornamental bricks and tiles, garden ornaments, terra-cotta, selenitic compounds, cements, plaster, concretes, slag, stoneware and clayware, building materials, models of dwelling-houses, cottages for the poor," with an *et cetera* besides. The list is enough to take away one's breath; the idea of treating of all these subjects at one sitting is out of the question. We have here the texts, rather, for a complete course of lectures, such a course as might very fairly be imposed on the whole of the rising generation. I was about to suggest that no one of either sex should be allowed to contract marriage before following such a course, but this might prove a check to a very useful institution; we must do nothing to discourage matrimony. But I should be glad if I could hope the time will come when all persons who have passed a fair examination in such a course will be excused from paying a certain proportion, say 25 per cent., of their rates and taxes, or in some other way be exonerated from obligations. It is quite certain that a much smaller amount of rates would then be required, for pauperism, crime, illness, and premature death are results of the ignorance which the truths that should be taught in such a course would greatly lessen. In sanitary matters, often, ignorance is literally death.

Knowledge in this direction is spreading, though it may be but slowly, and it is agreeable to the few who have, for long years, sought to force the public to believe in the importance of sanitary science, now to find it largely recognised and made, in fact, the war-cry and basis of a government.

Sanitary Architecture is our subject, as illustrated by arrangements and inventions in the Exhibition now open. What may be rightly termed Sanitary Architecture is not too often produced. The reverse is everywhere about us; courts and narrow streets; rooms underground; houses built back to back without the means of ventilation,—damp, stuffy, and fetid,—while in residences of greater cost there are found insufficient drainage, sealed up bed-rooms, and cisterns communicating with the drains, and so receiving and disseminating poisonous sewer gases. If we look to our public buildings, there is little less to be condemned. Our hospitals, until a few years ago, when some of us worked hard to make known the advantages, and enforce the adoption of what is termed the *pavilion plan*, were places where patients had less chance of recovery, aided by the most skilful surgeons or physicians, than they would have had if placed under a tent in a field, with an old woman for doctor; and even now there are such evil-conditioned buildings in use; as there are also Reformatories, Industrial Schools, and other asylums, where the children are never free from ophthalmia or some other man-created disaster.

Examine into the condition of our schools, and it will be found that many of the arrangements are destructive of health. Scores of children are crowded together without proper or indeed any arrangements for the removal of the vitiated air and the supply of pure air. The schools erected by the recently-appointed School Boards mostly show proper attention to sanitary requirements, but they are at present deficient in objects of delight. The walls of the school-room should be used to educate the eye, improve the taste, and elevate the nature of the rising generation. The education of a nation must begin in the cradle. I remember the feeling akin to disgust with which a visit to one of the school-rooms at famous Eton College a few years ago filled me. It was a low, dark, mouldy apartment with bare walls;—not one picture, print, or thing of beauty of any kind to be seen within it. Its aspect assisted to account for the coolness with which educated gentlemen are often heard to say, sometimes even as a sort of boast, "Oh! I know nothing whatever of art, and don't pretend to it."

Leaving for a time this question of beauty as a sanitary agent, I would notice that a feeling seems to be growing up which will eventuate, it may be hoped, in a general demand for sanitary architecture,—that houses shall be built not merely to sell, but fit to live in; with all those arrangements which make healthful and vigorous life possible. To obtain this, space is above all things necessary. Each inhabitant of a house should have at least 700 ft. cubic space,—say 9 ft. by 9 ft., 9 ft. in height. Even then the air requires to be constantly changed. I have entered scores and hundreds of sleeping-rooms, with little or no means for changing the air, where each inmate had not 100 ft. of space. What is the consequence? A degraded condition of health,—a kind of half-life,—no energy, no power. More than half the children born in such places die before they are five years old, and the death-rate, generally, is three times or four times as high as it is amongst people living under more healthful conditions. Overcrowding, as I have for years taken occasion to urge, means want of pure air; and want of pure air means debility, continued fever, death, widowhood, orphanage, pauperism, and money-loss to the living. I name money-loss last because, strange to say, a large number of persons seem to think that of much greater consequence than all the other evils put together. But,—

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay."

What is the value of material progress,—the piling up of money, the creation of property,—if the race degenerate, and the stamina of Old England be lost?

Let us now go a little into detail with the view of mentioning some of the more prominent or valuable objects in the exhibition, bearing on our part of the general subject.

The importance of a good *Foundation*, when about to build, cannot be over-rated; yet a scandalous practice of removing gravel and substituting slush and decomposing material prevails amongst speculative builders. The emanations cause serious evils. A good layer of cement concrete over the whole area ought to be insisted on, and a "damp-proof course" in the walls, just above the ground-line. There are specimens in the Exhibition, by Messrs. Stiff & Sons, in pottery-ware. They also exhibit some masses of concrete.

The value of *Concrete*, not merely for foundations, but as a building material in certain localities, is very great. It was my privilege, by an Essay in student-days, to assist mainly to bring it into use. Much abused in print, in more than one quarter, for what I foretold of it, it is satisfactory to find those views confirmed. Concrete is now used as a building material to a great extent. A large building in this material is being carried up in Church-street, Brighton, at this moment. Some of the concrete exhibited by the firm last named and by Mr. Hole is formed with selenitic mortar, which is cheaper than cement, and is said by some who have used it to be nearly as good. The process, which depends on well-known chemical action, is the discovery of General Scott, of South Kensington.

The *Drains* of our houses are often ill-formed and of permeable material, not seldom laid without proper fall, even with fall the wrong way, so that the solid matter remains in them.

The condition of the lower part of many

* From a Lecture on Sanitary Architecture and Sanitary Appliances exhibited in connexion with the Social Science Congress at Brighton: by Mr. George Godwin.

houses, if they were examined, would startle the country.

Messrs. Doulton & Co. exhibit good Drain-pipes, also Stanford's joint, the object of which is to allow a length of pipe to settle slightly without actually breaking the connexion.

Traps (proper expression, "Trap,"—"Trap to catch a fever") are for the most part delusions. The connexion of waste-pipes from cisterns, and pipes from sinks, with drains, has produced deadly results, the presence of an ineffectual trap lulling suspicion. There are specimens in the Exhibition of improved traps,—more or less improved traps,—from several inventors, Doulton, Middleton, Borwell, Sharp, Skeats, who sends Mr. Banner's arrangement (including a cowl to aid in ventilating the soil-pipe), McNeil Greig, and some others. The latter, Greig's, has considerable advantages. It is formed so that the solid matter immediately passes away, holds sufficient water to seal the end of the soil-pipe, and has attachments for ventilating tubes, as also have the others. This is the one great improvement which lately has been well laid hold of by the public,—the necessity for the ventilation of the house-drain.

Walls should resist moisture, and to do so should be formed of impermeable material. Dampness is costly—the cold produced requiring more firing—to say nothing of damage to health. Messrs. Brace & Co. exhibit bricks of a good sound material, as well as others of ornamental character, the forms of which might in some cases be better than they are. The use of burnt earth or *terra cotta* in architecture is becoming considerable, and it is, indeed, a most valuable material; properly manipulated and burnt, it is amongst the most durable of substances.

The application of pottery in the manufacture of cisterns is most desirable, the continued use of lead being bad in the extreme,—for soil-pipes also. No one has done more to introduce this sanitary ware than Mr. George Jennings, who exhibits practically in the lavatories of the Pavilion. In fact, there is scarcely a railway station or large building of any kind in which he does not do so. His career should be an encouragement to all strivers. With reference to *cisterns*, I would refer to the frightful condition of many,—constantly the cause of illness,—as I could prove by cases within my own knowledge. Connexion with drains, by means of waste-pipe, is the main cause, especially when the cistern is covered. This connexion should never exist. Cisterns should be often cleaned out. Messrs. Kay exhibit a model of a cistern to be formed in lava.

The exhibition of "closets" includes several novelties. Messrs. Pontifex & Son, whose brass-work, in the shape of cocks, taps, and so on, is distinguished for excellence, has one with a water-waste preventer attached, the arrangement of which is very ingenious. The same may be said for Mr. Howard's disinfecting closet. The earth-closet exhibited by Mr. Parker is self-acting, strong, and cheap. A specimen of Mr. Conyer Morrell's ash-closet is sent by the Sanitary Manure Company, and an arrangement on the same principle by Messrs. Gibbons & Green has merits of its own. To Mr. Morrell, I believe, belongs the credit of originally applying the house refuse, separating for other use the cinders. There can be no doubt of the usefulness of earth or ash closets in certain situations, but I am quite satified they will never meet the necessities of large towns.

I must hurry on to conclusion:—Mr. Meakin's *Sash-fastener* and Sash-raiser have established themselves as valuable appliances. The *parquet* flooring sent by Messrs. Howard & Son should be looked at. It is somewhat surprising that parquetry is not more used in England than it is. Mr. Stephens sends specimens of his well-known stains for woods, and Messrs. Maw & Co. of their flooring *Tiles*, in which they have deservedly a great reputation. Why are they not cheaper? *Filters* are sent by so many persons, and they are all so alike in principle, that it would be invidious to mention any one in particular. I earnestly recommend every one of them: no water should be drunk without being filtered.

The *Electric Bells*, sent by Messrs. Francis and Mr. Faulkner, should receive attention. Mr. Faulkner, by the way, has made a great discovery, by which the power of the permanent magnet is immensely increased by very simple means. It will surprise me if this discovery does not lead to the introduction of electricity as a motive power.

After speaking of the *useful* we must not omit to regard the *beautiful*, which to my mind is the highest kind of usefulness; and this is illustrated in the Exhibition by the Lambeth ware, produced by Messrs. Doulton: the jugs and other utensils are especially good. Messrs. Bailey, of Fulham, send some of a similar character; but Messrs. Doulton, by the course they adopted, have distanced all competitors. This course includes taking to their aid some of the students, male and female, of the Lambeth School of Art; an example, by the way, which ought to be followed, as I have before now urged, by other manufacturers in their various localities.

Uninteresting as some of these matters may seem individually, they go to make up a whole of supreme importance,—the production of healthful, happy, homes. The largeness of the interests involved, and the enormous extent to which good or bad arrangements in house-building will apply, may be shown by a few figures. In the past year, 1874, there were built in London alone 7,800 houses, and 3,500 more were in progress. If we take as an average cost per house 300*l*., and those in progress at half that sum, we find there were, in that year, 2,865,000*l*. spent in house-building in the metropolis alone,—and this is much under the mark. The length of new streets and squares built in London within the last twenty-five years is found to be 1,181 miles; and if we give 18 ft. frontage to each house, and retain as the average cost per house 300*l*., we find an expenditure of close upon 104 millions sterling.

Looking a little further, that is, taking all England and Wales, we have built dwelling-houses within the last ten years to the value of more than 220 millions sterling. If the population continue to increase as it has done, there must be more than a million of additional houses erected within the next ten years, at a cost of at least 300 millions sterling. These figures are too large for the mind to grasp, but they will serve to show you how enormous is the field over which good or bad building extends, and how important it is that these immense sums should be spent in the manner best calculated to conduce to the health, progress, and happiness of the people of this kingdom.

CURRENT NOTES IN LIVERPOOL.

The great recent disaster of Liverpool, the burning of the Landing Stage, is now near being repaired, as the new stage is rapidly approaching completion, and a considerable portion of it is already finished, and available for the passenger traffic of the ferry-boats to and from the Cheshire side. The approaches to the stage from the town,—considering the extent of the traffic, and the vast numbers of persons, many of them business men in a chronic state of hurry, who pass and repass every day,—are by no means yet what they should be, either in regard to directness of route or comfort to the pedestrian (not to mention the cab-horse). The amelioration of the neighbourhood in these respects must, no doubt, be a work of time and expense, but it should be regarded as a thing that has to be done.

Liverpool has been on the move recently in the matter of railway stations. The removal of the old "front" of Lime-street Station, the terminus of the London and North-Western Railway, and the erection of the great London and North-Western Hotel, from Mr. Waterhouse's plans, as the new front, is still to be counted among the rather recent architectural changes in the town; but already the demands of the traffic have led to the scheme of a further extension of the station (which had previously been considerably enlarged from its old dimensions), for which a considerable quantity of ground has been acquired, and which will, if we are correctly informed, include the continuation of the hotel on the same scale across the additional frontage. The Midland Railway Company have not long since opened their new station in Ranelagh-street, not much more than a furlong from the London and North-Western terminus, under the title of "Central Station," and which partly occupies the site of one of the most noted of the hotels of old Liverpool, the "Waterloo," now swept away. The Midland Station, though in reality no more "central" than the other one, is very decidedly so in a comparative sense; for the Midland Company, previously to its erection, had only a wretched and comfortless terminus near the North Docks, to which passengers were conveyed from the central portion of the town in omnibuses over the singularly uneven and jolting pavement of the "line of docks" road. The station would, no doubt, have been built long ago, but for the financial and legal difficulties in the way of acquiring land for it, and bringing the railway into the centre of the town. This has now been accomplished, by dint of tunnelling and deep and narrow cuttings, with less disturbance of property than might have been expected. The new station presents nothing much in the way of architectural style,—nothing certainly to vie with the North-Western Hotel architecturally; the main building forming the front is an Italian edifice which may be called inoffensive in treatment, but scarcely claims any higher title to respect. But the general arrangement of the building on the ground is very good; the oblique angle which the station forms with the street, owing to the irregularity of the boundaries of the site, has been cleverly dealt with so as to be rather an advantage to the approach, and to the effect, than otherwise: the line of the street is kept by a separate small block of buildings, containing parcel offices, &c., forming a kind of advanced guard to the main building, and having the outer wall parallel with the street line, and the inner wall parallel with the front of the station. Between this and the main front is the carriage entrance from the street at an oblique angle, and the space between the outbuildings and the front is bridged over with a glass roof carried on light iron girders. Within the station itself there is nothing to find fault with. The iron roof, of large span, is remarkably light and economical in construction, and there is a general look of spaciousness and airiness which is very satisfactory.

At the top of Ranelagh-street, in which the new station stands, was situated the old Adelphi Hotel, one of the houses most familiar to visitors to Liverpool, and long regarded as the principal hotel of the town. After a long lease of life, this has now gone,—the old building, not the hotel,—to make way for "larger and more commodious premises," as the shop-people say. The old "Adelphi" consisted, in its first estate, of some dwelling-houses thrown together; it was, if we mistake not, added to in a similar style, a long time since, and showed one of those respectable whitewashed, verandahed, and balconied fronts which in former days supplied all that hotel architecture was supposed to demand. More recently additions were made to each flank, in the shape of return wings facing the two adjoining streets, in a more ambitious architecture of stone dressings and patent brick; and now the old front has at last disappeared, and is being replaced with a new building, still in an early stage, in keeping with the new style of the wings.

The Liverpool Art Club is, or was a week or two since, giving an exhibition of Japanese lacquer-work, very complete in its way. The tendency of this club, which is an active institution in the illustration of art, seems however to be rather too much towards that sort of work which is illustrative of manual ingenuity and dexterity rather than of mental genius, of workmanship rather than art; and the prevalence of the fashionable adoration of everything Japanese (for it is no more than a fashion) is a little too apparent. The club are forming an exhibition of the collected works of David Cox, which will be more to the purpose, and it is to be hoped they will succeed in getting a fine and really representative collection of the drawings of our great water-colour artist.

In other respects art subjects in Liverpool do not seem so prosperous as might be wished, in so large and active a town. The munificent gift of an art-gallery by a recent Mayor was not unnaturally regarded as giving a great impulse to art in the town. Art-galleries, however, do not in themselves immediately create a taste for art, or an appreciation of what is best in it; and it would seem that the works already purchased and presented for ultimate position in the new gallery have by no means been the result of unerring judgment, and that, in fact, however respectable they may have appeared as contributions to a temporary exhibition, only a minority of the number are really worthy of a position in a permanent gallery of art. An art-gallery filled with pictures of only mediocre merit may almost be regarded as an evil rather than a good; the most that could be urged for it would be as a place of amusement to those to whom innocent amusements are scarce; in any other sense it can only do harm, by habituating people to an inferior standard of work. The

best use the Liverpool people could make of their art-gallery at present, probably, would be by establishing a fine loan exhibition, for a time, of really high-class pictures. There are good private collections within reach of Liverpool, whose owners, as well as those in other parts of England, would probably be willing to lend works for a considerable period for such a purpose; and the gallery would thus be put to the best possible immediate use, and time afforded for the exercise of care and judgment in the selection of pictures to be permanently hung there. At present the idea seems to be that the gallery should be filled by pictures purchased out of the annual exhibition, whereby the exhibition fund is benefited and the gallery filled at the same time. As only a very moderate proportion of the best contemporary paintings are sent to provincial exhibitions, and the best of those are often sold previously, it is obvious that such a system cannot lead to a very satisfactory result; but it is only an illustration of the decidedly "pound-shillings-and-pence" view of art which seems to prevail in the great port on the banks of the Mersey. If we are to credit newspaper reports which have reached us, it would appear that a short time since the rapid formation of the Art-gallery and the artistic decoration of the Council Chamber were specially urged by a "patron" of art in the Municipal Council, on the ground that there was nothing to detain visitors in Liverpool at present; and that the interests of the Liverpool tradesmen suffered seriously from the fact that there was no inducement to the hundreds of Americans who landed at Liverpool *en route* for a European tour to stay a day or two and spend money in the town. This notion of the value of art, as a means of catching the spare cash of travelling Americans, at all events deserves the praise of "cuteness." The building itself, now being erected for the proposed permanent collection of pictures, we gave a view of some time since. The style seems to be suggested by that of the adjoining Free Library; and though the building may, and we hope will, answer its purpose very well, as a repository for works of art, it can hardly be reckoned as an important addition to the architectural interest of the town, or as illustrating very fortunately the particular art of architecture. A space which now exists between the Free Library and the new Art Gallery will eventually be filled, or partially so, by a new circular reading-room, the foundation-stone of which, according to a resolution of the Town Council, is to be laid by an old member of the architectural profession, Mr. J. A. Picton, and the room to be called after him "The Picton Reading-room." Mr. Picton, whose name is known to many of our readers, has taken for many years a prominent and active part in the management of the Free Library, an institution which, like the new Art Gallery, was the gift of a wealthy townsman. In the upper rooms of this building is held the annual picture exhibition, which, it must be said, is not quite worth the jubilations which have been made over it by the local press. Mr. Poynter's "Golden Age" is there, looking as beautiful as it did at the Academy*; and Mr. Armitage's "Emperor Julian" and Mr. Leighton's "Slinger" (which latter, we fear, will nowhere be deemed quite worthy of the artist's fame), and some other good pictures; but there is a large proportion of works which it can do no real good to hang up, and the average interest of the oil-paintings is not equal to that of the Manchester exhibition; while in the class of water-colours there can be no comparison. Manchester is ahead of its rival at present in regard to painting and architecture, the latter especially.

The central architectural work of Liverpool, St. George's Hall, has received renovation and redecoration internally, and was reopened to the public two or three weeks since. We printed recently a short report of what had been done, and from the wording of the communication which reached us it would seem that the prevalent idea was to brighten up the interior, which was regarded as "gloomy." This it scarcely could be said to have been, but it was deficient in light to some extent from the omission of windows on the east side, in accordance with the supposed exigencies of Greek architecture, which Elmes desired to reproduce as far as possible in its purity. What has been done now amounts really to destroying, in great measure, the aërial effect and the scale of the great hall. The history of St. George's Hall includes a curious catalogue of mistakes and unfortunate experiments. Putting aside the question of the adaptability of the style to a northern climate, the building was an absolute mistake from the first, in regard to convenience, or rather inconvenience of plan and arrangement, and in regard to the ostensible object of the great hall as a music-room, for which purpose it is probably the most unfit room in England. This arose partly out of what, viewed in a practical light, must be considered the bigotry of its enthusiastic architect in favour of his own art, which led him absolutely to scout all suggestions for the improvement of the acoustic properties of the room which might seem to interfere with his architectural ideal. The one success, practically, of the building, is the small concert-room, which is as good for its purpose as the other is bad. Elmes was deprived, after all, of his ideal effect of an uninterrupted vista through the Hall into the courts beyond, by the interposition of the large organ obstructing the view. Considering the immense size of the instrument this was, perhaps, scarcely to be avoided. Then a series of experiments were made with the approaches: pillars and gates put up and removed, balustrades the same, levels altered, and so on. The present arrangement of the approach on the principal side is perhaps the best that has been arrived at. The exterior itself has never been finished as its architect intended; a fact of which we suspect many people in Liverpool, even among those who profess an interest in art, are perfectly unaware. The complete design includes the carving the square panels on the surbase and in various parts of the building with bas-reliefs, and the addition of statues in the interspaces between the square columns at either end of the building, in the portions occupied by the courts of law. Those who are inclined to spend money upon art in Liverpool could hardly spend it better than in completing the exterior of St. George's Hall by the addition of sculpture of a high and severe type, in the positions where it was intended by the architect. Defective as the building is practically, it must be regarded as by far the finest example we have of the modern revival of Greek architecture, and as such it would be well worth while to render it complete.

In the midst of all these alterations and incompletenesses of the exterior, the great hall has always impressed every one as a noble and dignified interior, in spite of some Roman impurities of style in the decorative detail. Indeed, the hall, with its deeply-recessed arches at the side, and its barrel-vault, is Roman and not Greek. The recent operations have consisted in raising the floor, decorating the whole anew in colour, and reglazing the windows. The raising of the floor is a decided improvement. In the original design the interior was surrounded by a kind of dais or platform a few feet wide, and the centre portion sunk three or four steps below this, so as to form a kind of well, as if a large artificial pond were contemplated. What was Elmes's object in constructing the floor thus it is difficult to understand; when the building was quite empty it might add a grandeur to the whole by furnishing a kind of continuous pedestal for the architectural design; when the hall was filled the sight of the audience seated on this low level was uncomfortable-looking enough, and of course very bad for hearing. A good while ago a temporary wooden floor on the higher level, laid down for some large ball, was thought so much more convenient that it was suffered to remain, though the fine and elaborate tile design of Messrs. Minton, on the main floor, was thus entirely hidden from view. Now, the wooden floor has been at last got rid of, the tiles taken up, and the centre raised to the higher level, and the tiles relaid. This is in every way an improvement; for the raising of the floor takes away nothing from the apparent height of the hall, which the eye always reckoned from the daïs that formed the floor line to the architectural design of the interior. But the result of the decoration of the ceiling and upper portion is far from satisfactory. The original decoration of the ceiling, under the direction, it may be presumed, of Cockerell, who was appointed to superintend the completion of the building after Elmes's death, was of a very light and delicate description, a good deal of white, if we remember rightly, being left, with slight touches of gilding. This when new had an admirable effect, but of late years had become much obscured by dust and the effects of gas. Renovation was required; but instead of restoring the old design, which might very well have been done, the whole feeling and effect of the thing has been altered and deteriorated by a decoration in much stronger and more pronounced colours, of such a tone as entirely to destroy the distant effect which was evidently intended in the former decoration, and to bring down the ceiling in appearance much closer to the eye, losing all the aërial tint and reducing the apparent height considerably from what it was. Moreover, the general key and tone of the whole is in no way above what might be called "house-decorator's" work of no very refined type. Before, there was a very fine effect of aërial perspective in looking up to the vault; all this has gone, and with it much of the impressive effect of the interior. The scale of the building has been interfered with in other ways. Part of the original decoration in Cockerell's design consisted of large (colossal) figures in relief in the spandrels of the side arches. These were in a certain sense a defect, for they falsified the scale of the architecture near them. They have now been thrown further into prominence by a strong gold ground, from which the white figures stand out in a most glaring manner. A treatment of the ground in a broken-up diaper design would have served to correct the scale to the eye; the flat gold background only increases the false effect as to size. The same mistake has been made in the treatment of the windows. These were glazed in comparatively small lights of a simple ornamental pattern, which it had been contemplated to fill with colour, and some small bits of stained glass, by way of experiment, were for a long time to be seen in one or two of the windows. Any stained glass that might have been inserted ought to have been very light in tone and with very little strong colour; so treated it would have been an improvement. But in deference to the notion that the hall was gloomy, the whole of the original glazing has been removed and the windows filled with great pieces of obscured plate-glass the full width of each light. Those who know the effect which glazing has on the scale of a building will easily understand what the result must be, not to speak of the bald and common-place appearance of the windows as thus treated. The old glazing made scarcely any appreciable obstruction in the light, and gave surface and extent to the windows; and if it were determined to do away with all the framing and have whole glass, at least the glass might have had an enamelled design to give surface and scale to it. Those who care much about the effect of the hall have been greatly annoyed at its treatment; and the question we heard asked on one occasion, "Have you seen St. George's Hall since it was made into a gin-palace?" may be taken as an indication of the sort of result produced. That may perhaps be putting it a little too strongly; but certainly we have seldom seen a case of a fine interior so decidedly, and we fear, for the present, irremediably vulgarised; and considering that St. George's Hall is, as we observed, the finest modern building of its class, anything relating to its architectural or decorative treatment is of more than local interest.

* Since writing the above, we hear that this picture has been bought and presented to the town as a contribution to the Art Gallery. It can hardly be called a work of genius; but its solid merits of execution, and the point and meaning with which the subject is treated, justify the selection, which is, in fact, one of the best that has been made.

THE SOCIAL SCIENCE CONGRESS, BRIGHTON.

Many good papers have been read, and useful discussions, if they had been reported, have taken place, so that from the higher point of view the Brighton Congress was a success. Financially, however, it will, we fear, prove a failure. A certain few of the inhabitants, always ready for any good work, threw themselves heart and soul into the matter, but the bulk of the population know little and care less for the subjects treated of. This is a serious thing, because the Association depends mainly on the amount realised at its congresses, over and above the expenses, for its maintenance and efficient working in London during the year. The Exhibition of Sanitary and Educational Appliances was a successful feature, and would have been more so if some of the leading members of the Association had not cold-shouldered it. Although such an exhibition is now regularly organised in connexion with each congress, it is not regarded as actually part of the proceedings. Mr. James Robinson, the assistant secretary, has worked night and day to make it useful, but he cannot fight successfully against the pre-

sent want of clear understanding on the subject. We fully admit that there is something to be said on both sides, but the executive when they next begin work in town ought to settle the question one way or the other.

We cannot attempt to give an account of the proceedings, the papers and discussions in connexion with the Health Department alone would more than fill our number. We have, however, strained a point, and printed several of the papers on subjects most likely to interest our readers. We have printed, for example, the paper read by Mr. Collins to introduce the first special subject for discussion in the department in question, viz.:—"To what causes are to be attributed the ill construction and want of sanitary provisions which exist in the dwellings of the upper and middle classes, and what is the best method which should be adopted to remedy and rectify the same." A paper on the same subject by Mr. W. Eassie was partly read. A valuable discussion followed, and, ultimately, it was resolved unanimously:—"That it be recommended to the Council to call the attention of the Local Government Board to the necessity for further and more complete legislation on the construction of dwelling-houses for all classes, showing that a clause is necessary for enforcing that all newly-built houses should be properly certificated previously to their occupation."

At the second meeting of the Health Department, the special question for discussion was: "What are the advantages of English as compared with foreign watering-places and health resorts? What are the best means for rendering the English watering-places more efficient, for obviating the dangers arising from the occasional introduction of infectious diseases, and determining the annual rate of mortality?" The first paper was by Dr. John Macpherson. It gave a description of the character of winter and summer resorts abroad and at home. In regard to sea-bathing places, it was alleged that those of England were superior to all others in regard to natural beauty, ranges of houses, piers, jetties, and bathing-ground; the French watering places were the only ones that could compete with our own, and their social arrangements were much more lively. In regard to mineral waters, we were behind other countries. Several suggestions were made in the paper for the improvement of watering-places as places of recreation, general comfort, instruction, and so on; and it was specially recommended that greater protection from the sun by means of shady avenues should be afforded.

A paper on the same subject was read by Dr. E. F. Fussell, Medical Officer of Health for East Sussex, which dealt mainly with the question of health. The meeting-place, in the Pavilion, was crowded, and a long and earnest discussion ensued. In the course of it,—

Professor Wanklyn said it was impossible to disinfect large masses of material, which could only be dealt with by being subjected to a high temperature or burned. The numerous "rookeries" in Brighton and London ought not be pulled down, but to be burned down. The houses removed for the erection of the New Law Courts should have been burned down. The materials were now spread over London, and were scattering disease among the people; and the cost to the nation of adopting that course would equal a year's national revenue.

Dr. Farr said he believed that English watering-places were quite equal as health resorts to any of those on the Continent; and Brighton was justly called the Queen of Watering-places. Of course, the sanitary condition of such places should be of the first order. He was not, like Mr. Tawle, afraid of town sewers; but these should be well trapped and flushed in order to make them perfectly harmless. Professor Wanklyn's proposal for burning down rookeries might, he thought, be tried; but the Professor himself should be required to superintend the process, and be responsible for the conflagration not spreading. The speaker thought the children who had had measles, scarlet fever, &c., might be better dealt with at home instead of being taken to the seaside. If such patients were permitted to go to health resorts, they should be sent to localities specially appointed for convalescents. He had no doubt that Brighton would henceforth be classed by the Registrar-General among "principal towns."

The president (Dr. B. Richardson) said it appeared that they were all agreed that English watering-places bore a favourable comparison with any others; but it was singular that they showed such great differences in point of mortality, the death-rate varying in ten years from fifteen at Bognor to twenty-four at Whitby. He then alluded to the importance of registering disease as well as death, including the diseases of animals and plants. Only by such registration could the proper means of prevention be ascertained and adopted. He agreed with other speakers as to the desirability of certifying lodging-houses at watering-places, and he thought it would only be fair to the lodging-house keepers that their visitors should bring certificates as to their own freedom from infectious disease. There was no doubt that the laundry was one of the most common causes of the spread of disease.

Ultimately it was resolved "That it be recommended to the Council to suggest to the local sanitary authorities of our English watering-places and health resorts the desirability of establishing a system by means of which owners of lodging-houses and hotels should be enabled to have their premises inspected by a competent authority, and certified if found free from infection, and in a general healthy condition with reference to drainage and other sanitary arrangements," and "That it be recommended to the council to take into consideration the desirability of compelling, by legislative enactment, medical men attending cases of an infectious character to report the same to the medical officer of health."

DEEP WELLS.

Water procured from wells is too hard for domestic purposes, for trades, and for sanitary purposes. That which is caught before it sinks into the ground is much superior; but when the hardness of water is caused by an excess of carbonate of lime, it may be removed by Dr. Clark's process. All water obtained from the chalk formation has this excess of hardness. The best water procurable by means of wells is obtained from the new red sandstone formation, and these two great geological formations,—the cretaceous and the triassic,—are the two chief sources from which water is procured by means of deep wells. As to shallow wells in the midst of dwelling-houses, which are supplied with water from the drainage from the immediately surrounding surface, they are an abomination, and deep wells only are worth consideration; and notwithstanding the objection we have named to deep well-water for the general purposes of a town supply, we must acknowledge the service Mr. Spon has done in bringing together from various sources the information contained in a book now before us.*

It appears that in the new red sandstone there are several wells belonging to the Tranmere Local Board, the Birkenhead Commissioners, and the Wirral Water Company, which yield altogether about 4,000,000 gallons per day. The new well of the Birkenhead Waterworks is 7 ft. diameter for a depth of 105 ft., with a bore-hole 26 in. diameter for a depth of 35 ft., 18 in. for 16 ft., 12 in. for 99 ft., and 7 in. for 150 ft., or a total depth from the surface of 405 ft. The water stands in the shaft at a depth of 95 ft. from the surface when the engine is not at work.

It is stated that out of the 7,000,000 gallons per day supplied to Birmingham in the year 1865 by the Water Works Company, 2,000,000 were derived from wells in the new red sandstone.

At the London and Colonial Brewery at Burton-on-Trent, a shaft, 6 ft. 8 in. diameter in the clear, is sunk to a depth of about 35 ft., and from the bottom of the shaft a bore-hole, 4 in. diameter, was made down to a depth of 182 ft. The water rises to within 6 ft. 3 in. of the top of the well.

At Leamington there is a well at the foot of Newbold hill, 5 ft. diameter, sunk to a depth of 50 ft., and a bore-hole, part of the way 18 in. diameter, and the remainder 12 in., is carried down 200 ft. The yield is said to be 320,000 gallons per day.

At Liverpool there are several wells sunk into the new red sandstone, the oldest of which is at Bootle, to the north of the town. The yield of the Bootle well in 1865 was 643,678 gallons per day. Since this time a new well, of oval form, 12 ft. by 9 ft., and 108 ft. deep, has been sunk, and at its completion the yield rose to 1,575,000 gallons per day, but it has again diminished considerably.

At the Green-lane wells the surface of the ground is 144 ft. above the sea level, and the depth is 185 ft., the botton being 41 ft. below the sea level. At first the yield was 1,250,000 gallons per day. A bore-hole, 6 in. diameter, was then made to a depth of 60 ft. from the bottom of the well, when the yield increased to 2,317,000 gallons per day. In June, 1856, the bore-hole was widened to 9 in., and carried down 101 ft. farther, when the yield amounted to 3,000,000 gallons per day. A new shaft was sunk here in 1869 to a depth of 174 ft., and from the bottom a bore-hole was made to a further depth of 310 ft., and the additional quantity of water from the bore-hole was 800,000 gallons per day.

The Windsor station well at Liverpool is of oval form, 12 ft. by 10 ft., 210 ft. deep, from which a bore-hole, 4 in. diameter, is put down to a further depth of 245 ft., the yield being nearly 1,000,000 gallons per day.

The Dudlow Lane well, 12 ft. by 9 ft., is sunk to a depth of 247 ft. from the surface of the ground, and an 18-in. bore-hole has been made to a further depth of 196 ft. The yield is nearly 1½ million gallons per day. From all these shafts headings are driven into the rock to collect more water, and to form lodge-room or reservoirs to equalise the daily pumping-power.

At Longton, in Staffordshire, there is a series of wells in this formation, from which part of the supply to the Pottery towns is derived. One is 12 ft. diameter and 135 ft. deep. The water rose to within 35 ft. from the surface. The author gives the cost of sinking this well, and other particulars of it, as well as other wells of this series.

A deep well in the new red sandstone was sunk at the works of Messrs. Bolckow & Vaughan, at Middlesbrough, under the direction of Mr. S. C. Homersham. A trial-hole was first put down to a depth of 398 ft., and a shaft was afterwards sunk by Messrs. Docwra & Son to that depth. At the bottom of the shaft a bore-hole of 18 in. diameter was made, on Mather & Platt's system of sinking, to a depth of 1,312 ft. This bore-hole was sunk in 510 days, being at the average rate of 2 ft. 5 in. per day. The author gives the particulars of other wells in the new red sandstone; in the Permian strata at Sunderland; in the oolite strata at Northampton and Swanage; and in the chalk, or rather in the cretaceous strata as a whole, there are, it appears, upwards of 260 wells and bore-holes within the area of the London basin alone, the depths and other particulars of which are given.

There are several methods of sinking shafts and bore-holes, the most recent which has been adopted in England being that of Messrs. Mather & Platt, of Oldham, mentioned above. It is an adaptation of the old Chinese method of working with a rope, and not with rigid rods, which is the other mode. In the Chinese method a chisel is suspended by a rope and is worked by means of a spring-pole or lever at the surface. The twisting and untwisting of the rope is useful in preventing the chisel from always striking in the same place. In boring through hard rocks it is necessary to watch the tools, and replace them before their sides are worn and the breadth diminished. If this is not attended to the size of the hole decreases, so that when a new chisel of the proper size is put in, it will not pass down to the bottom of the hole. In soft ground cylindrical augers are used, having a valve at the bottom opening inwards, through which the *débris* passes into the shell, and is there retained and drawn to the top. This and similar methods of boring are applicable to holes of small diameter only, but M. Kind invented a system of boring great wells with a heavy trepan. In sinking the well at Passy the weight of the trepan was 36 cwt., and it cut a hole 3 ft. 4 in. diameter nearly. The trepan was usually worked for about eight hours at a time, after which it was withdrawn, and the comminuted material was then drawn out with a shell. The average number of men employed was about fourteen.

By the system of M. Chandron, which is a modification of Kind's, a shaft of 14 ft. or 15 ft. in diameter is sunk by means of trepans, the small trepan being first used to cut a central hole, 4 ft. 8 in. in diameter. The small trepan weighs eight tons, and it is generally kept at a depth of ten to thirty yards in advance of the large trepan, which follows it, and widens out the shaft to the full dimensions. The large trepan weighs sixteen tons and a half. The *débris* in the small hole contains pieces of a maximum size of about 8 cubic inches. In the large boring, pieces of rock measuring 32 cubic inches have been found. As a rule,

* The Practice of Sinking and Boring Wells. By Ernest Spon. London: E. & F. N. Spon. 1875.

however, the material is very fine. In both the large and small borings the *débris* is raised by a shell.

The system of M. Dru is the application of a free-falling tool, self-acting, to the sinking of wells of large diameter. The cutting-tool is detached from the rod by a self-acting catch. The boring-rods employed for large wells are of wood, and are stiffer, for the same weight, than iron rods.

The system of Messrs. Mather & Platt combines the advantages of the systems hitherto used, and is free from some of their disadvantages. The distinctive features of this plan are the mode of giving the percussive action to the boring-tool, and the construction of the tool, or boring-head, and of the shell-pump for clearing out the hole. Instead of these instruments being attached to rods, they are suspended by a flat hemp rope, about ½ in. thick and 4½ in. broad. The quickness of the operations in this system is remarkable. The boring-head is lowered at the rate of 500 ft. per minute. When in its place it is made to give twenty-four blows per minute, and this rate of working continued for about ten minutes in red sandstone and similar strata is sufficient to enable the cutters to penetrate a depth of about 6 in., when the boring-head is wound up again at the rate of 300 ft. per minute. The shell pump is lowered and raised at the same speeds, but only remains down two minutes, and the emptying of the pump when drawn up occupies about two or three minutes.

The breaking of tools is of frequent occurrence under any system of boring, and the various appliances for the recovery of the working tools are fully described by the author.

As to the quantity of water derived from the chalk formation by wells, the author has given the quantity from about forty wells in the "London Basin," situated in the counties of Bedfordshire, Berks, Bucks, Essex, Hants, Herts, Kent, Middlesex, and Surrey. In some cases the quantity is stated at per day, and this we have taken to mean twelve hours, when twenty-four are not expressly stated. In most cases the quantity is stated at per minute, and reducing the rest to the same time, we find the average yield of each of the forty wells to be 183 gallons per minute.

At Bishop's Stortford a shaft is sunk 160 ft., and a bore-hole to a further depth of 140 ft. The depth of chalk penetrated is 183 ft. The water rises to within 140 ft. of the surface of the ground. The yield is said to be 10,000 gallons per minute, but this must surely mean per hour, although it is again stated at the same quantity per minute in another page; but only 25 gallons per minute come from the bore, the rest is from headings driven at a depth of 154 ft. from the surface.

At Brighton, also, the headings intercept many fissures, the largest of which yielded from 100 to 150 gallons per minute. At another well at Brighton, a length of 160 ft. of heading was driven without meeting with any water, and then an enormous fissure was pierced, which yielded nearly 1,000 gallons per minute. The total length of the headings at this well is 13,000 ft., and the total yield about 3,000,000 gallons daily.

At Chelmsford a well belonging to the local board yields about 95,000 gallons per day. It is sunk for 200 ft., the rest bored. Water overflowed at first, but now that the well is in use and pumped from, the water does not rise higher than to 76 ft. from the surface.

At Dorking, in Surrey, the water is obtained from a well sunk in the outcrop of the lower green sand. The shaft is 11 ft. diameter and 160 ft. deep; but the yield is not more than thirty gallons per minute. At Harrow there is a shaft 193 ft. deep, the rest is bored, the total depth being 412 ft. In a bed of dark red sand 144 ft. down the water was very foul. The yield is 190 gallons per minute. Many other examples are given by the author, and altogether we must come to the conclusion that well sinking and boring are very uncertain and expensive operations, without an adequate result in a supply of water of desirable quality and quantity.

Bo'ness Harbour Improvement.—A meeting of the Trustees under the Town and Harbour Improvement Act was held on the 30th ult., when the question of harbour improvement was considered. Messrs. Thomas Meik & Son, C.E., Edinburgh and Sunderland, were appointed engineers for the works, and instructed to prepare plans and estimates for the new pier.

A MODEL CITY OF HEALTH AND COMFORT.

As President of the Health Department at the Brighton Congress, Dr. Benj. Richardson, F.R.S., delivered his address last Monday morning. He said,—"Mr. Chadwick has many times told us that he could build a city that would give any stated mortality, from 50, or any number more, to five, or, perhaps, some number less, in the thousand annually. I believe Mr. Chadwick to be correct to the letter in this statement, and for that reason I have projected a city that shall show the lowest mortality. I need not say no such city exists, and you must pardon me for drawing upon your imaginations as I describe it. Depicting nothing whatever but what is at this present moment easily possible, I shall strive to bring into ready and agreeable view a community not abundantly favoured by natural resources, which, under the direction of the scientific knowledge acquired in the past two generations, has attained a vitality not perfectly natural, but approaching to that standard. In an artistic sense, it would have been better to choose a small town or large village than a city for my description; but as the great mortality of States is resident in cities, it is practically better to take the larger and less-favoured community. If cities could be transformed, the rest would follow. Our city, which may be named Hygeia, has the advantage of being a new foundation; but it is so built that existing cities might be largely modelled upon it. The population of the city may be placed at 100,000, living in 20,000 houses, built on 4,000 acres of land,—an average of 25 persons to an acre. This may be considered a large population for the space occupied, but since the effect of density on vitality tells only detrimentally when it reaches a certain extreme degree, as in Liverpool and Glasgow, the estimate may be ventured. The safety of the population of the city is provided for against density by the character of the houses, which insure an equal distribution of the population. Tall houses overshadowing the streets, and creating necessity for one entrance to several tenements, are nowhere permitted. In streets devoted to business, where the tradespeople require a place of mart or shop, the houses are four stories high, and in some of the western streets, where the houses are separate, three and four-storied buildings are erected; but on the whole it was found bad to exceed this range, and as each story is limited to 15 ft., no house is higher than 60 ft. The substratum of the city is of two kinds. At its northern and highest part there is clay; at its southern and south-eastern gravel. Whatever disadvantages might spring in other places from a retention of water on a clay soil is here met by the plan which is universally followed of building every house on arches of solid brickwork. So, where in other towns there are areas and kitchens and servants' offices, there are here subways through which the air flows freely, and down the inclines of which all currents of water are carried away. The acreage of our model city allows room for three wide main streets or boulevards, which run from east to west, and which are the main thoroughfares. Beneath each of these is a subway, a railway along which the heavy traffic of the city is carried on. The streets from north to south which cross the main thoroughfares at right angles, and the minor streets which run parallel, are all wide, and, owing to the lowness of the houses, are thoroughly ventilated, and in the day are filled with sunlight. They are planted on each side of the pathways with trees, and in many places with shrubs and evergreens. All the interspaces between the backs of houses are gardens. The churches, hospitals, theatres, banks, lecture-rooms, and other public buildings, as well as some private buildings, such as warehouses and stables, stand alone, forming parts of streets, and occupying the position of several houses. They are surrounded with garden space, and add not only to the beauty but to the healthiness of the city. The large houses of the wealthy are situated in a similar manner. The streets of the city are paved throughout in the same material. As yet, wood pavement set in asphalte has been found the best. It is noiseless, cleanly, and durable. Tramways are nowhere permitted, the system of underground railways being found amply sufficient for all purposes. The side pavements, which are everywhere 10 ft. wide, are of white or light grey stone. They have a slight incline towards the streets, and the streets have an incline from their centres towards the margins of the pavements. From the circumstance that the houses of our model city are based on subways, there is no difficulty whatever in cleansing the streets, no more difficulty than is experienced in Paris. That disgrace to our modern civilisation, the mud-cart, is not known, and even the necessity for Mr. E. H. Bayley's roadway movable tanks for mud sweepings—so much wanted in London and other towns similarly built—does not exist. The accumulation of mud and dirt in the streets is washed away every day through side openings into the subways, and is conveyed, with the sewage, to a destination apart from the city. Thus the streets everywhere are dry and clean, free alike of holes and open drains. Gutter children are an impossibility in a place where there are no gutters for their innocent delectation. Instead of the gutter, the poorest child has the garden; for the foul sight and smell of unwholesome garbage he has flowers and green sward. It will be seen, from what has been already told, that in this our model city, there are no underground cellars, kitchens, or other caves, which, worse than those ancient British caves that Nottingham still can show the antiquary as the once fastnesses of her savage children, are even now the loathsome residences of many millions of our domestic and industrial classes. There is not permitted to be one room underground. The living part of every house begins on a level of the street. The houses are built of a brick which has the following sanitary advantages:—It is glazed, and quite impermeable to water, so that during wet seasons the walls of the houses are not saturated with tons of water, as is the case with so many of our present residences. The bricks are perforated transversely, and at the end of each there is a wedge opening, into which no mortar is inserted, and by which all the openings are allowed to communicate with each other. The walls are in this manner honeycombed, so that there is in them a constant body of common air let in by side openings in the outer wall, which air can be changed at pleasure, and, if required, can be heated from the firegrates of the house. The bricks intended for the inside wall of the house, those which form the walls of the rooms, are glazed in different colours, according to the taste of the owner, and are laid so neatly that the after-adornment of the walls is considered unnecessary, and, indeed, objectionable. By this means those most unhealthy parts of household accommodation,—layers of mouldy paste and size, layers of poisonous paper, or layers of absorbing colour stuff or distemper,—are entirely done away with. The walls of the rooms can be made clean at any time by the simple use of water, and the ceilings, which are turned in light arches of thinner brick or tile coloured to match the wall, are open to the same cleansing process. The colour selected for the inner brickwork is gray, as a rule, that being most agreeable to the sense of sight; but various tastes prevail, and art so soon ministers to taste that in the houses of the wealthy delightful patterns of work of Pompeian elegance are soon introduced. As with the bricks, so with the mortar and the wood employed in building, they are rendered, as far as possible, free of moisture. Sea-sand containing salt, and wood that has been saturated with sea-water, two common commodities in badly-built houses, find no place in our modern city. The most radical changes in the houses of our city are in the chimneys, the roofs, the kitchens, and their adjoining offices. The chimneys, arranged after the manner proposed by Mr. Spencer Wells, are all connected with central shafts, into which the smoke is drawn, and, after being passed through a gas-furnace to destroy the free carbon, is discharged colourless into the open air. The city, therefore, at the expense of a small smoke rate, is free of raised chimneys and of the intolerable nuisance of smoke. The roofs of the houses are but slightly arched, and are, indeed, all but flat. They are covered either with asphalte, which experience, out of our supposed city, has proved to last long and to be easily repaired, or with flat tile. The roofs, barricaded round with iron palisade, tastefully painted, make excellent out-door grounds for every house. In some instances flowers are cultivated on them. The housewife must not be shocked when she hears that the kitchens of our model city, and all the kitchen offices, are immediately beneath these garden roofs; are, in fact, in the upper floor of the house instead of the lower. In every point of view, sanitary and economical, this arrangement succeeds admirably. The kitchen is lighted to perfection, so that all un-

cleanliness is at once detected. The smell which arises from cooking is never disseminated through the rooms of the house. In conveying the cooked food from the kitchen, in houses where there is no lift, the heavy-weighted dishes have to be conveyed down, the emptied and lighter dishes upstairs. The hot water from the kitchen boiler is distributed easily by conducting pipes into the lower rooms, so that in every room and bedroom hot and cold water can at all times be obtained for washing or cleaning purposes; and, as on every floor there is a sink for receiving waste water, the carrying of heavy pails from floor to floor is not required. The scullery, which is by the side of the kitchen, is provided with a copper, and all the appliances for laundry work; and when that is done at home, the open places on the roof above make an excellent drying-ground. In the wall of the scullery is the upper opening to the shaft of the dust-bin shaft. This shaft, open to the air from the roof, extends to the bin under the basement of the house. A sliding door in the wall opens into the shaft to receive the dust, and this plan is carried out on every floor. The coal-bin is off the scullery, and is ventilated into the air through a shaft, also passing through the roof. On the landing in the second or middle stories of the three-storied houses there is a bath-room, supplied with hot and cold water from the kitchen above. The floor of the kitchen and of all the upper stories is slightly raised in the centre, and is of smooth, gray tile. The floor of the bath room is the same. In the living rooms, where the floors are of wood, a true oak margin of floor extends 2 ft. around each room. Over this no carpet is ever laid. It is kept bright and clean by the old-fashioned beeswax and turpentine, and the air is made fresh and ozonic by the process. Considering that a third part of the life of man is, or should be, spent in sleep, great care is taken with the bedrooms, so that they shall be thoroughly lighted, roomy, and ventilated. Twelve hundred cubic feet of space is allowed for each sleeper, and from the sleeping apartments all unnecessary articles of furniture and of dress are rigorously excluded. Old clothes, old shoes, and other offensive articles of the same order are never permitted to have residence there. In most instances the rooms on the first-floor are made the bedrooms, and the lower the living rooms. In the larger houses bedrooms are carried out in the upper floor for the use of the domestics. To facilitate communication between the kitchen and the entrance-hall, so that articles of food, fuel, and the like may be carried up, a shaft runs in the partition between two houses, and carries a basket lift in all houses that are above two stories high. Every heavy thing to and from the kitchen is thus carried up and down from floor to floor, and from the top to the basement, and much unnecessary labour is thereby saved. In the two-storied houses the lift is unnecessary. A flight of outer steps leads to the upper or kitchen floor. The warming and ventilation of the houses is carried out by a common and simple plan. The cheerfulness of the fireside is not sacrificed; there is still the open grate in every room, but at the back of the fire-stove there is an air-box or case which, distinct from the chimney, communicates by an opening with the outer air, and by another opening with the room. When the fire in the room heats the iron receptacle, fresh air is brought in from without, and is diffused into the room at the upper part on a plan similar to that devised by Captain Galton. As each house is complete within itself in all its arrangements, those disfigurements called back premises are not required. There is a wide space, consequently, between the back fronts of all houses, which space is, in every instance, turned into a garden square, kept in neat order, ornamented with flowers and trees, and furnished with playgrounds for children young and old. The houses being built on arched subways, great convenience exists for conveying sewage from, and for conducting water and gas into, the different domiciles. All pipes are conveyed along the subways, and enter each house from beneath. Thus the mains of the water-pipe, and the mains of the gas, are within instant control on the first floor of the building, and a leakage from either can be immediately prevented. The officers who supply the commodities of gas and water have admission to the subways, and find it most easy and economical to keep all that is under their charge in perfect repair. The sewers of the houses run along the floors of the subways, and are built in brick. They empty into three cross main sewers. They are trapped for each house, and, as the water supply is continuous, they are kept well flushed. In addition to the house flushings there are special openings into the sewers, by which, at any time, under the direction of the sanitary officer, an independent flushing can be carried out. The sewers are ventilated into tall shafts from the mains by means of a pneumatic engine. The water-closets in the houses are situated on the middle and basement floors. The continuous water supply flushes them without danger of charging the drinking-water with gases emanating from the closet,—a danger so imminent in the present method of cisterns, which supply drinking as well as flushing water. As we walk the streets of our model city we notice first an absence of places for the public sale of spirituous liquors. Whether this be a voluntary purgation in goodly imitation of the National Temperance League, the effect of Sir Wilfrid Lawson's Permissive Bill and most permissive wit and wisdom, or the work of the Good Templars, we need not stay to inquire. We look at the fact only. To this city, as to the town of St. Johnsbury, in Vermont, which Mr. Hepworth Dixon has so graphically described, we may apply the description Mr. Dixon has written:—"No bar, no dram-shop, no saloon defiles the place. Nor is there a single gaming-hell or house of ill repute." Through all the workshops into which we pass, in whatever labour the men or women may be occupied,—and the place is noted for its manufacturing industry,—at whatever degree of heat or cold, strong drink is unknown. Practically, we are in a total abstainers' town, and a man seen intoxicated would be so avoided by the whole community that he would have no peace to remain. And, as smoking and drinking go largely together,—as the two practices were, indeed, original exchanges of social degradations between the civilised man and the savage, the savage getting very much the worst of the bargain,—so the practices largely disappear together. Pipe and glass, cigar and sherry cobbler, like the Siamese twins, who could only live connected, have both died in our model city. Tobacco, by far the most innocent partner of the firm, lived, as it perhaps deserved to do, a little the longest; but it passed away, and the tobacconist's counter, like the dram counter, has disappeared. The streets of our city, though sufficiently filled with busy people, are comparatively silent. The subways relieve the heavy traffic, and the factories are all at short distances from the town, except those in which the work that is carried on is silent and free from nuisance. This brings me to speak of some of the public buildings which have relation to our present studies."*

QUEEN ANNE'S MANSIONS, WESTMINSTER.

The late fire at Mr. Hankey's new mansion, adjoining Birdcage-walk, gives a more than ordinary interest to the exceptionally lofty block of new buildings which he is erecting immediately adjacent to his own residence, and which has attracted much attention within the last few days on the part of visitors who have been drawn to the scene of the recent conflagration. The new buildings under consideration are the loftiest in the metropolis, as residences, and may, perhaps, not inaptly be described as a huge tower, rather than as a block of dwellings. Had the Metropolitan Board of Works obtained the Building Act for which they applied last year, Mr. Hankey would have been prevented from erecting such a structure as that now in progress.

Queen Anne's Mansions, as they are designated, stand upon a plot of land at Queen Anne's-gate, immediately opposite the St. James's Park Station of the Metropolitan District Railway, and have their principal frontage in Broadway, from which they are approached under a spacious archway, having a span of about 24 ft. This archway also leads into a courtyard, which the western frontage of the building overlooks, and through which Mr. Hankey's mansion is also entered. The elevation contains the unprecedented number of ten stories, and is 97 ft. in height to the cornice, which is immediately above the eighth floor. A Mansard roof, 19 ft. in height, and containing two floors, brings the elevation up to 116 ft. At the south-west angle of the building there will be a tower, 22 ft. square, which will be carried up to a height of 130 ft., and contain a tank capable of holding 8,000 gallons of water. At the base of the tower there will be a hydraulic lift, for the purpose of conveying residents and others to and from the upper portions of the building, and in the tower there will also be a stone staircase. The tower will have a brick cornice, and will be surmounted by a belvidere, with an iron railing, upwards of 20 ft. high, the extreme height of the tower being thus about 150 ft. The Mansard roof will be covered with zinc of the shell pattern, and surmounted with an iron cresting. In addition to the east, or Broadway frontage, and that overlooking the court-yard to the west; there is also a north elevation, giving a commanding view of St. James's and the adjoining parks. The several elevations have about 250 windows, all of which will have projecting pediment heads, covered with zinc, uniform with the Mansard roof, whilst at the foot, or sills, of each range of windows there will be iron balconettes. In consequence of the unusual height of the building extra precautions are said to have been taken to ensure security. It is to be hoped this is the case. The main external walls at the ground line are 2 ft. 6 in. in thickness, and at intervals between the several floors iron girders are thrown across, upon which the building rests. For the ventilation of the building, ventilating valves are placed in the walls both at the floor and ceiling lines of each story. Some of these will be self-acting, whilst others will be regulated according as it may be found necessary to increase or decrease the air and circulation. The building is internally "fire-proof" to the floor above the mezzanine, whilst all the other floors are supported on iron columns and girders.

The ground and mezzanine floors are intended to be let as offices and chambers for engineers and other professional persons, while the whole of the rest of the building will be occupied as residences of a high class. The reception and other apartments on the several floors are spacious, some of them being 30 ft. by 20 ft., whilst others are 20 ft. square. Each floor contains several bath-rooms and lavatories, and the approaches to the rooms on the different floors are along corridors 10 ft. wide. A large area on one of the floors of the building, about the centre, is ultimately intended for musical purposes, and the erection of an organ is contemplated. The present building is also intended to be carried southward in the direction of York-road, and will contain a large dining-room and all the domestic arrangements in connexion with the establishment. It is also stated that on the present lease expiring, another wing will be eventually erected on the north side facing Birdcage-walk, and overlooking St. James's Park.

The building has been designed by Mr. Hankey himself, and is being carried out by his own workmen, under the personal supervision of Mr. Nash as his clerk of works. It may be added that the restoration of that portion of the mansion destroyed by the fire last week will be commenced in a few days, the owner himself, as in the case of the buildings just described, being his own architect; whether wisely or not, it is unnecessary for us to say.

* The conclusion in our next.

Alarming Gas Explosion at Brighton.—On the 29th ult., about seven o'clock, an explosion took place which might have been attended with grave results, at the premises of Mr. Eyles, a newspaper publisher, at the top of North-street, one of the most crowded thoroughfares in Brighton, and most miraculously only one person happened to be passing at the time, on the other side of the road, which is 50 ft. wide just there, and who was considerably hurt. It appeared that a smell of gas had been previously observed, and the result proved that the gas must have accumulated in a great quantity behind the fascia board over the shop-window, and that an outside draught must have caused the outside hanging lamps to ignite the gas, causing the explosion, which hurled the whole of the fascia and some of the lead covering, &c., a distance outwards of 50 ft., smashing the plate glass of a shop on the opposite side, the report being heard over a great part of the town, and causing great consternation in the neighbourhood. Strange to relate, very little damage either inside or over the premises took place. But the case is one of warning to shopkeepers and the public, for in many cases death may in a similar way be waiting for victims.

BUILDING SOCIETIES IN AMERICA.*

The Department of Social Economy in the American Social Science Association have forwarded a Report on "Homes for the People in American Cities." Being too long for reading on this occasion, the Committee have requested me to lay before the meeting a condensed view of it. It is an interesting and valuable communication, and will doubtless find a place in our Transactions. It appears that in 1870, when the last national census was taken, there were about fifty cities in the United States with a population exceeding 25,000, of which *seven* (New York, Philadelphia, Brooklyn, St. Louis, Chicago, Baltimore, and Boston) had each a population exceeding 250,000, and seven more had a population of above 100,000 each. The aggregate population of the seven first-named cities then somewhat exceeded 3,200,000, New York alone containing 942,292. The remaining cities had an aggregate population of about 2,000,000, so that the whole urban population of the United States, dwelling in towns of more than 25,000 people, was not far from 6,000,000, or nearly one-sixth part of the whole population of the United States. So rapid is the increase of the urban population, however, that in the present year, 1875, it includes nearly one-fifth of the whole present population of the United States. Ten years hence, it is probable that the United States will have a hundred cities larger than Boston was at the beginning of this century. Hence the great importance of the question now to be considered,—*the ownership, situation, and quality of the homes in which so many millions of the people are to live, and where their children are to be brought up.*

Shall they be tenement houses, like those of New York and Boston, in which so many of the industrial classes now dwell, or shall they be smaller houses, in better locations, owned by their occupants, like the humble homes of Philadelphia, Chicago, Syracuse, Detroit, and so many of the smaller American cities? In answering this question, each city will need to consider its own needs and possibilities, varying greatly as these do; but it will also do well to consider attentively the means by which Philadelphia, now a city of more than 750,000 inhabitants, has provided for its industrial population better homes than any large city in the world can show for an equal number of working men and small tradesmen.

The contrast between the two largest American cities, New York and Philadelphia, in this respect is very marked, and in the highest degree unfavourable to New York, where also the condition of things is growing worse, while in Philadelphia it is growing better. By the census of 1870 the number of dwellings in New York was but 61,044, for a population of nearly a million,—an average, therefore, of nearly fifteen persons to each dwelling. But in nine of the twenty-two "wards" of New York, a population of 365,000 was housed in only 17,110 dwellings, an average of 21⅓ persons to each dwelling. When Paris (in 1835) contained about the same population that New York now has, the number of houses there was 50,476, and the number of persons to each dwelling was 22, or just about the same overcrowding that we now find in the worst parts of New York. In Philadelphia, on the other hand, a population of 674,000 in 1870 was housed in 112,366 dwellings, giving one house to every *six* persons, while in the worst part of Philadelphia the average number of persons to a dwelling did not much exceed *eight*, or only a third part of the highest New York average.

The number of dwelling-houses built in Philadelphia since 1870 is about 24,000 (at the rate of a little less than 5,000 a year); so that the present number of dwellings in that city is upwards of 135,000, which, at an average of six persons to each dwelling, would give a population in 1875 of 810,000. This is more than the estimated population of the city, and therefore the proportion of dwellings to population has been increasing there,—the very result we should expect from the system of building pursued in Philadelphia (which is afterwards described).

In other cities the contrast is not so striking. In Boston, for example, in consequence of successive annexations of suburban territory, the proportion of persons to each dwelling in the whole city has considerably diminished in thirty years, and does not now, apparently, exceed 7½ persons to each dwelling.

Taking together the three cities of New York, Brooklyn, and Jersey City, there was, according to the census of 1870, an aggregate population of about 1,421,000 living in less than 120,000 dwellings (one for twelve persons). At the present time it is probable that these three cities contain more than a million and a half inhabitants, occupying no more dwellings than are found in the single city of Philadelphia, with less than half as many inhabitants.

The results of the overcrowding in New York are painfully apparent. The reporters attribute the difference between New York and Philadelphia to several reasons, one of which is that in Philadelphia the custom of letting land for a term at a ground-rent has long prevailed and made it easier for persons of small means to build and own their own houses than it would have been had they been compelled to purchase the land on which they built. It is a novel thing to us in England to hear a system applauded which has produced amongst us so much bad building, and is, for other reasons, now so suspiciously regarded.

Foremost amongst the causes, however, which have provided healthful homes for the people of Philadelphia, the reporters place the operations since the year 1850 of Building Societies, closely resembling the Benefit Building Societies of England as they existed in Lancashire and other northern counties from 1820 to 1850, and while, as they very properly point out, these societies were yet controlled in the interest of the working people. The first society of this sort in America, admittedly following the English model, was founded in 1831. It is estimated that the present number of building societies in Pennsylvania is upwards of 1,000, more than half of them being in Philadelphia, where it is stated there are more than 30,000 houses now occupied by their owners, and which became their property through the operation of these associations. A long account of the working of these societies is given in the report with strong commendation.

Speaking of the prevalence of tenement-houses in New York and Boston, they point out that the death-rate is highest in the parts of these cities where the tenement-houses, each containing numerous families, are the most numerous; and there, also, crime, vice, and pauperism most abound. Complimentary reference is made to the doings of Miss Octavia Hill, whose example has been followed in New York and Boston with more or less success.

It is found in Boston that the New Building Laws there, requiring greater strength, have almost put an end to the building of small houses, by adding greatly to the cost of construction.

A full description is given of the small houses built in Philadelphia under the operation of the societies; they are said to be uniformly in good repair, and neat in appearance. The party-wall between two houses is uniformly of brick. They are from 12 ft. to 17 ft. front, and from 26 ft. to 34 ft. deep; the average of the two-story houses being 14 ft. by 30 ft., on lots 14 ft. by 50 ft. or 60 ft., and even 80 ft., in remote parts of the city. They have four, six, and sometimes, in three-story houses, eight rooms and a bath-room. The front doors are rarely over 2 ft. 6 in. wide and 6 ft. 6 in. in height; the entry usually runs through the house, with stairs at the back, and is narrow. These streets are in good order, and the neighbourhoods are proverbial for the quiet behaviour of the people. The policemen say they never have any trouble there, and other people speak of them as being good citizens. Drunkenness is not common among them, they are generally temperate, industrious, and frugal.

The State of Pennsylvania, in which these Building Associations exist in greater numbers than in all the rest of the United States together, had, in 1870, a population of more than three and a half millions, and now has probably more than four millions. Close beside it is the little State of Delaware, with only 125,000 inhabitants in 1870, of whom about one-fourth (30,841) dwelt in its single city of Wilmington. Here the proportion of persons living in one dwelling is less even than in Philadelphia, being only 5¼; and here, too, a great many of the working people have become owners of their homes through the aid of Building Associations like those of Philadelphia.

It is about twenty years since these associations began to exist in Wilmington, and none has ever been known to fail. All classes of the people there invest in them, but the borrowers, who are more than half of the shareholders, belong almost wholly to the middle and labouring classes. In some of the States these societies are discouraged by the Legislature or by the Courts, on the ground that they exact usurious interest. This was formerly the fact in Pennsylvania also, but they are now allowed there, in Illinois, and in several other States, to deduct what premium they choose from the loans they make, without being liable to forfeiture of contract by reason of usurious interest. They do not at present exist in Massachusetts or New York, and in Michigan the Act creating them has been declared unconstitutional.

Briefly to recapitulate the statements set forth in the report,—it appears that overcrowding already prevails in a few American cities,—notably in New York and its suburbs, in Boston, and in Cincinnati; but that in most of the cities there are more dwellings in proportion to the number of inhabitants than in the cities of Europe. The tendency is for overcrowding to grow worse from year to year, as the city population rapidly gains; but this tendency is counteracted in many cities by the inclusion of cheaper land within the city limits; by the changes which often take place in the localities of trade and manufacture, making crowded quarters more useful for other purposes than habitation; and by many other causes. Among these may be named, as a matter of certainty, though sometimes called in question, the generally increased prosperity of the working people (who have been quite steadily improving their condition since the beginning of the civil war), and the action of municipal government and benevolent citizens. In Philadelphia and a few other cities, a great check has been given to overcrowding by the action of the Benefit Building Societies, which, contrary to the custom of such societies in England, as the reporters say with emphasis, do provide homes of their own for working people, even of the humblest grade. The management of these societies in Philadelphia is described at some length, both because of their extraordinary results, and because they differ in many respects from the English Building Societies as now constituted, though originally the plan and working of them seems to have been much the same in the two countries. The difficulties and dangers attending these societies are not dwelt upon, because their success in Pennsylvania has been unquestionable, and because, their principle in the opinion of the reporters being sound, they only need vigilant and honest management to succeed elsewhere. They think it is but fair to say that in some portions of the United States, where Building Societies or Loan-fund Companies somewhat resembling those in Pennsylvania were attempted twenty years ago, with unfortunate results, their failure seems to have been owing to a departure from the true method of management. These societies need to be managed (at least in America) by the whole body of their members, and for the mutual benefit of the borrowing and non-borrowing members. This was not done in the unsuccessful associations of Massachusetts and Connecticut; and whenever it ceases to be done in Philadelphia, misfortune will sooner or later be the result.

It was not thought necessary to point out the moral, social, and political advantages to be derived from the best practicable arrangement of homes for the people in cities and large towns. These advantages are even greater in a democracy than under any other form of Government; and hence one reason for the increased attention which Americans are giving to the subject. The theory of their institutions requires that every citizen should have a home and a family interest in the community—that he should be self-supporting and self-controlled—giving naturally his aid to the Government which exists by his own choice. The risks and evils attendant upon overcrowding and ill-government in their great cities are now quite as formidable as those which relate to the condition of the southern freedmen; but a vigorous effort, such as becomes a great nation, will, they believe, by the blessing of Providence, give them security, stability, and prosperity, even greater in the future than in the past.

The Duomo, Florence.—At last a design for the Façade of the Duomo is fixed upon,—that by De Fabris. His plan was carried by vote. We hear opinions for and against De Fabris's design. There will be a still graver point to think of,—the how to get the money to pay for it. A collection throughout Italy is to be made.

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* From "Some Notice of a Report, from the American Social Science Association, on Homes for the People in American Cities," read at Brighton, by Mr. George Godwin.

TO WHAT CAUSES ARE TO BE ATTRIBUTED THE WANT OF SANITARY PROVISIONS IN THE DWELLINGS OF THE UPPER AND MIDDLE CLASSES,

*And What is the Best Method which should be adopted to Remedy and Rectify the Same?**

"Builder and House Decorator. Funerals Furnished with economy and despatch."—A truthful irony which most peripatetics must have noticed, and the veracity of which all, sooner or later, will probably have realised.

Like the plumber who always left a defect in his work that it might be rectified by some brother workman, "to make good for trade," so the modern genius of the British builder ingenuously advertises, with honest candour and charming *naïveté*, his intention of so building for the living that he may bury them the sooner with "economy and despatch"; thus emulating the philanthropy of Sairey Gamp, who, you will remember, expressed an equal pleasure "in laying people in" as she did "in laying them out." * * * *

I propose, in the first instance, to inquire, 1st. How the evils which I shall indisputably prove to exist have arisen, and why? 2nd. To enumerate in what they consist. 3rd. To endeavour to suggest the means of remedying and preventing them.

To what causes are to be attributed the grossly defective sanitary condition of the abodes of the upper and middle classes? I shall show beyond a doubt that these pretentious houses of the "well-to-do" contain more unknown and concealed immundities than the unobtrusive dwellings of the poor. Let us consider the history of the circumstances under which a house of the metropolis or its suburbs rises into existence.

The land is let by the owner upon the shortest lease that he can procure a builder to accept, and at the highest ground-rent that can be obtained.

The lessee, building for speculation, generally not overburdened with cash, more often impecunious from the commencement of the transaction, immediately creates an improved ground-rent, disposes of the same at less than the market value, and thus provides himself with funds. He then proceeds to finish with as much celerity as he possibly can, borrowing as large an amount on mortgage of the building during its progress, or after its completion, as he can obtain. Then he lets and sells, or, more frequently than not, the property passes into the possession of the mortgagee, who hastily and economically completes it himself. The house being let, is probably again parted with, both on the part of lessor, lessee, and mortgagee, and the unfortunate tenant finds himself in possession of a structure which he must either mainly rebuild to live in with comfort, or he must submit with resignation to its inconveniences and defects. Throughout the process thus sketched, it will be observed that each party to each transaction has his interest opposed to his honesty. The landlord, eager to convert his land into ground-rent, cares but little how or by whom this desirable consummation is obtained; the builder, anxious for his profit, and working for "dear life," expends as little as he can, and depends on the ignorance or avarice of the public to recoup his minimum outlay. The mortgagee, desirous of realising (finishing by compulsion), emulates by necessity the example of the builder. Throughout all is speculation, seldom or never "investment,"—which latter would be a panacea for the evil. When the transaction is concluded, all the original parties to it have vanished, leaving not a trace behind. Then comes the tenant, who, whilst able to pay a fair rental, cannot afford, or is unwilling, to expend the large sum necessary to make this Frankenstein of a house fit for habitation in executing that which he not unnaturally considers as improvements to another man's property,—a property to which in a few years he will have no claim, and which will have in due course passed to his successor: he therefore complies in as niggard a mode as he can with the terms of his holding; the landlord, in obtaining re-possession, copies his late tenant's example, and so the "Town house," originally ill constructed, and now deteriorated by time and use, becomes a "death trap" for those who enter into its portals. But, you will say, "Is all this done without any architect's or engineer's supervision?" I am obliged to answer in the affirmative. As a general rule, the public of the Metropolis are totally unprotected in this respect. It is true that oftentimes the professional man lays down the plan of the estate, and sometimes designs the elevations, because the interest of the owner would otherwise be affected; but here his duty stops. The surveyor who advises as to value for purposes of mortgage only directs his investigation as to the "market value" of the property submitted to his consideration,—if badly built he advises less, if well, more to be advanced; he simply determines what the public will, in his opinion, give for the house, what it will fetch, whether the locality is an improving one, and then calculates its worth in market overt, and so reports to his employer. With its defects of plan or its want of sanitary arrangements he has absolutely nothing to do; the public will not appreciate them in the price, why should he? It is a pure business transaction. Ay, but you rejoin, how about the legal enactments? Surely the local authorities or the district surveyor intervene, and the public is thus protected? This time I am compelled to answer negatively,—It is true that there are Acts of Parliament which in theory afford great and useful powers; it is equally true that up to the present (as facts prove) they have been inoperative, or, at all events, have not stemmed or prevented the evils to which I am directing your attention. I venture to assert that London and its suburbs are infinitely worse provided for than many second-rate provincial towns, most of which have the construction of their buildings and streets regulated by bye-laws issued under powers of the Public Health Act, and sanctioned by the Home Secretary. If you turn, by way of example, to "the bye-laws" of this town wherein we are now assembled [Brighton], you will find most admirable arrangements for the preservation of the public health. If these are effectually carried out, house sanitation is undoubtedly greatly if not perfectly protected. Doubtless in the course of our discussion we shall learn how far these provisions have passed from theory to practice, and if they have been adopted, and with what success. I will merely mention a few points, and I may say that most of the bye-laws of similar towns which I have inspected contain the same provisions. The widths of streets and heights of houses are stringently regulated. The strength, construction, and quality of materials for building the walls of houses are defined; a wise precaution is taken, it being stipulated that no new house shall be inhabited without a certificate has been given by the Board that the same is fit for habitation. A considerably larger space surrounding the houses for ventilation is demanded than compelled by the Metropolitan Building Act. Careful provisions are made as to the drainage and ventilation of drains, some of which, however, are, I think, open to emendation.

Within the metropolitan area, the regulations affecting the widths of streets, drainage, &c., are provided for by the Metropolis Local Management Act and its amendments. Before I had carefully considered their provisions, I judged from the irrefragable testimony of facts which experience had presented to my notice, that enactments contained in these Acts were, from some occult cause beyond my ken, impossible to be put in execution; that they were, or had become, as I have said, practically inoperative. I found, however, on careful perusal that the clauses were sufficiently numerous, and the language sufficiently wide, to admit of such construction as, if enforced, would largely contribute to the sanitary welfare of the population. By the 73rd section Vestries can compel houses to be drained at proper levels, and it directs that fit and proper sinks, and fit and proper syphoned or otherwise trapped inlets and outlets for hindering stench therefrom, and fit and proper water supplies, &c., and all such other fit and proper works and arrangements as may appear to the vestry or to the board, or to their officers, requisite to secure the safe and proper working of the said drains, shall be provided. By subsequent clauses it declares that it shall be unlawful to erect any house, or to rebuild any house, or to occupy any house, unless the drainage is constructed to the satisfaction of such surveyor, provisions for notices to be given by builders, &c., and general precautions to prevent evasion are laid down. Yet, I repeat, the majority of our London houses, new or old, are badly drained and badly constructed. I fear the apathy of the public, the ignorance of those who should administer the provisions of the Acts, and official red tapeism, are the foundations of the neglect. At present the clauses are, for all practical purposes, as far as the interior of our houses are concerned, dead letters. I point to facts as evidence that this is so, and in answer to your why? I ask you to examine into the subject for yourself, and you will soon receive a definite reply to your query. That it is possible to put these clauses into effect we have triumphant evidence; but then the officer who has vivified the dead bones of the law, clothed them with practical intelligence, and moved them with the motive power of the strength of his will and intellect, is a gentleman thoroughly versed in the subject,—I am proud to add an active member of our Council and Association,—I mean Mr. Arntz, the surveyor to the Board of Works for Westminster. He has not only laid down an admirable series of regulations for the drainage of the houses in his district, but he has thereby, in compliance with the Act of Parliament, pointed out, in clear and unmistakable language, so that "he who runs may read," that which he will pass as fit and proper works; and in order not to afford any excuse for non-compliance, he has illustrated his intentions by means of a working diagram, which by his favour I exhibit and direct your attention to. Now, whether houses are allowed to be occupied until "passed" by him, I know not, but in answer to my inquiries he has written to me, that "the system has been in operation about two years, and has been applied to a large number of houses and buildings in and outside his district"; that as yet there have been no refusals to comply with his requirements; and he adds that he is sure "the public is willing enough to adopt improvements when they are shown to be practicable and without serious difficulty," an opinion with which I am sure most of us will coincide. Possible, then, as it is to ensure good drainage by Act of Parliament, it will only be accomplished by the active co-operation of the public.

The construction of our town houses is governed by the Metropolitan Buildings Act, an Act passed to regulate the construction of buildings so as to prevent accident by fire, and which does not pretend to affect, except very indirectly, the sanitation of the buildings themselves. Impressed with its anomalies, with the confusion of its clauses, the ambiguities of its language, and the difficulties attending its working, the Metropolitan Board of Works, in that public spirit which always distinguishes its action, in the Session of 1874 introduced into Parliament a Bill containing most wise and useful material for ensuring the future health and welfare of the house-dwellers of the metropolis. This Bill was referred to a select committee.

I think if the Board had been content with a little it might have obtained more; if it had determined to amend the present Act it would have succeeded; but, unhappily for the sanitation of the metropolis, it endeavoured to combat with the selfish interests and conveniences of various bodies, which rose hydra-headed at every step taken: these proved strongest, and the Board succumbed. One unanimous expression of opinion embodied in the form of a resolution was arrived at by the committee, *inter alia*, viz., "That it was important that the District Surveyor should have full power to stop the progress of any building in which the material or construction is calculated to be dangerous to health, and to summon the builder or owner before the magistrate." At present on this head we are legally helpless. As I actively assisted the Bill, I may state that it was prepared with great care, drawn with the skill which pervades the work of the Board solicitor, promoted with vigilance by Col. Hogg and the members of his Board, defended with acumen by Mr. Philbrick and Mr. Bazalgette, and withdrawn with great regret, after a protracted struggle before one of the most prejudiced and hostile committees which it has ever been my lot to encounter. It is to be sincerely hoped that the Board will not be deterred from performing its bounden duty,—that of securing an efficient workable Building Act, for the preservation and protection of its numerous and ever-increasing constituents,—and that it will shortly re-introduce an amended measure.

The present Act entirely fails to maintain anything like proper sanitary construction in metropolitan houses, besides which the conflicting decisions of magistrates weaken its authority and enfeeble the efforts of those who seek to construe its provisions to serve the public interest. But determination and zealous energy have now and again succeeded, and but recently Mr. Knightley,

* From a paper by Mr. H. H. Collins, elsewhere alluded to.

our district surveyor for Hammersmith, obtained from Mr. Ingham, the magistrate, an order for the demolition of a wall which had been erected with mortar consisting of 20 per cent. of sand and 80 per cent. of clay, and which was wittily described by the *Daily Telegraph* as a wall on which "Humpty Dumpty could not sit with any chance of safety, to say nothing of the 'eligible tenants' who, in times to come, might seek the shelter of the wall, together with three others and a roof covering all; the whole forming what is called by courtesy a house." Probably, however, if this decision be appealed against, it may be upset. I only quote the case as an exception to prove the rule. The Building Act, for all practical points of sanitation, is, I much fear, unworkable, without, indeed, the magistrates would uphold the efforts of the district surveyor, which hitherto they certainly have not done.

There is one other Act, the Nuisance Removal Act, which in some measure is incorporated with the Metropolitan Local Management Act, and the provisions of which are constantly applied by vestries, but as a rule its application is limited to the houses of the poor, and seldom or never is it applied to those of the upper and middle classes. Here, again, the poor man's dwelling has an advantage over the rich one. Inspection, which would be resented as an interference by the wealthy, would in reality prove a safeguard and a blessing.

In the course of my own experience, extending over more than twenty years, I am able to speak of the utter neglect and crass ignorance of sanitation which I have encountered, and with which, indeed, I have to combat every day. I select a few examples with which to conclude this part of my subject.

A few years ago a client of mine who resided in a large house in a wealthy suburb informed me that his wife and two daughters had suffered in health ever since they had occupied their house; that he had consulted several medical men without beneficial result; and that he wished me to make a survey of the premises. He paid a rental of about 200*l.* per annum. I found that the drainage was in every way defective, although he told me that he had expended a large sum of money in making it "perfect"; the gradients were bad, the pipes choked, and the joints unsound. The servants' water-closet was adjacent to the scullery, which was in communication with the kitchen,—the sink being directly opposite the kitchen-range. The water-closet was supplied direct from the cistern, the waste from which entered the drain, although it was said to be trapped. The waste of sink was simply connected with the drains and trapped with an ordinary bell-trap, the cover or trap of which I found broken. Under the kitchen-range hot-water tap I found a trapped opening also leading into the drains. The domestics complained of frequent headaches and general depression; and I need not add that it excited no surprise, seeing that the kitchen fire was continuously drawing in from the sewers and house-drains a steady supply of sewer gas to the house and drinking-water cistern. In addition, I found the basement walls damp owing to the absence of a damp-proof course and the want of dry areas. The upper water-closets, house-closets, and cisterns were situated over each other off the first-floor landing and directly opposite the bedroom doors. The bath and lavatory were fixed in a dressing-room communicating with the best bedroom, the wastes from which were carried into the soil-pipe of closets; this latter was unventilated, but was trapped with an S pipe at the bottom. The water-closets were pan-closets, and were trapped by D traps. The upper closet periodically untrapped the lower closet and bath traps, giving the impure air free access to the house and cistern, which latter was also in communication by means of its waste-pipe with the house-drains. The overflows from safes of the water-closets were practically untrapped. The peculiar nauseating odour of sewer gas was distinctly perceptible, and I had little doubt but that atonic disease was rapidly making its inroads on the occupants. The landlord refused to recognise the truth of my report. My client, acting on my advice, relinquished his lease, took another house, the sanitation of which was carefully attended to, and his wife and children have had no recurrence of illness.

Some short time since I had to report on a new house not quite completed, built in a fashionable quarter of the metropolis, the rent being 160*l.* per annum. This is the state of sanitation I found to exist. The basement cistern, lined with zinc was in direct communication with the pan of the servants' water-closet. Both cistern and water-closet were inclosed in an unventilated space. The sink was placed in a scullery directly opposite the kitchen range, with waste connected with drains. Numerous sinks had their wastes carried directly into house-drain. The upper closets and bath-room were fairly positioned, but the hot-water pipes were in contact with the lead pipes, and the wastes of cisterns were tapped into the soil-pipes, which in this instance were common iron rain-water pipes with joints made in oil cement. Of course I recommended my client not to take the house without these sanitary defects were properly rectified. A surveyor of some repute called at my office with my report in his hands: he characterised my objections as puerile and my requirements as unnecessary, and informed me that in the house in which he dwelt (a yet more fashionable locality) the state of things I complained of had existed for over twenty years, and that neither himself nor his family had ever experienced any inconvenience. It was simply a case of "persuade a man against his will, and he is of the same opinion still." I refused on behalf of my client to take the house without my demands being satisfied: the landlord, however, consented, and the alterations were effected.

I have recently purchased on behalf of a client the lease of a mansion in Portland-place, from a well-known nobleman, who had spent, as I was informed, a fortune in providing new drainage. Indeed, I found the principal W.C. built out of the house altogether, the soil-pipe of which, however, was carried through the basement, where it was supposed to be connected with the drain. Upon removing the floor-boards, to examine it, I found the ground surrounding the connexion literally one mass of black sewage, the soil oozing through the joint even at the time of examination, and the connexion with the main drain laid in at right angles. The 9-in. drain-pipes ran through the centre of the house, having a very slight gradient, and had evidently not been laid in many years. They were nearly full of consolidated sewage, and but little space was left for the passage of the fluid. With but a slightly-increased pressure the joints would have given way, and the sewage would have flowed under the boards, instead of into the sewer. The sinks, W.C.s, and cisterns were all badly-positioned, and all more or less defective in sanitary arrangements. In the butler's pantry the sink was placed next to the turn-up bedstead of the butler, who must have inhaled draughts of impure atmosphere at every inspiration. The soil-pipes of the closets have, indeed, been ventilated with a zinc rectangular tube; but as this had been so positioned as to let the sewer-gas through an adjacent skylight into the house, and the odour being extremely disagreeable, it had been, by his lordship's directions (as I have been told), closed. Here was evidence that it had, at all events, been doing some service, and probably had only poisoned a few of the domestics. I found the bends of soil-pipes likewise riddled with holes, as described by Dr. Fergus. There happened to be a housemaid's sink situated close to a bedroom-door, the waste from which had been carefully connected with the soil-pipe, so that, probably, had the closets been satisfactorily ventilated, this arrangement would have defeated the obect in view. I should also mention that the best W.C. was situated on the bedroom-floor, under the stairs, and was lighted and ventilated through a small shaft, formed of wood boarding, and carried to the roof; it also opened by a window to the main or principal staircase. The gutter of the roof ran through the bedrooms, and under the floors at the time of examination it was full of black, slimy filth. This is a fair specimen of the sanitary arrangements of a nobleman's "town house," situated in one of the best streets of this great metropolis, and in the year of grace 1875.*

Thames Valley Drainage Act.—Mr. Grantham, C.E., the inspector appointed by the Inclosure Commissioners, will shortly hold meetings in Berkshire, Oxfordshire, Wiltshire, and Gloucestershire, to make inquiries for declaring the jurisdiction of the Commissioners appointed under this Act to extend to the limits proposed, constituting the Districts and District Boards, fixing the number of Commissioners to be elected, and as to any other matters connected with it.

* To be continued.

THE FLORENCE CONGRESS OF ARCHITECTS AND ENGINEERS.

This their second congress was held in Florence on the 13th of last month and following days. The first congress of architects was held in Milan, when the noble monument raised to Leonardo da Vinci was inaugurated. The meeting in Florence was attended by men of art and science from all parts of Italy. The Syndic Peruzzi opened the meeting. Of architecture, which Cavaliere Francolini, president of the congress, justly styled the queen of the fine arts, Professor Villari spoke at some length, on the first motion,—"To point out the difference between an engineer and an architect, and say what are the limits of the professions." He remarked that the architect is an *artist;* the engineer studies science and practises it. He wished to see the architect surrounded by an artistic atmosphere. Architecture as an art is being neglected. In works of great importance it must be seen that industrial art is entirely subservient to artistic art. A professor of architecture of Zurich had said that in the Academy of Dresden, in the midst of all that is artistic, architects are formed; in the Polytechnic schools they are not; but could give no reason for this. Professor Villari was of opinion that the art could be studied perfectly there; but thought it absolutely necessary that schools of architecture, purely as art, should be founded. Men such as Alvino, Betti, and others were of his opinion. All noble professions have especial schools; why not architecture?

It was then suggested that as there does not exist in Italy, in the Academy of Fine Arts, any scientific instruction, or at least such as to create good architects, that in one or more of the Academies of Fine Arts a school of architecture should be founded, in which should be given, with all the artistic instruction, also the necessary scientific teaching indispensable to the exercise of the profession, and which should also confer diplomas. Also that Florence, on account of her artistic traditions and her monuments, is the best adapted for such schools, and the Government should be asked to institute at least one, and in this city, for Italy.

Debates were held on fluvial hydraulics. The suggestion of Engineer Goretti was approved of for the prevention of torrents, namely, his system of immersing trees with sacks full of stones or other heavy material; or for the defence of rivers, immersion of sacks similarly filled with heavy material, and large barges loaded with stones, by which the vortex would be stayed, and cover the part threatened, while barriers could be constructed behind.

Maritime hydraulics were discussed; the best modes of ventilation; the construction of roads in towns and country; the best means of cleansing the Tiber; and the working of mines in Italy. The meeting closed on the 22nd, and with the proposition that the next congress should be held in Naples.

INDIAN PREPARATIONS FOR THE RECEPTION OF THE PRINCE OF WALES.

Great activity begins to prevail throughout India in making preparations for the reception of the Prince of Wales, and cabinetmakers, upholsterers, and decorators are working against time in order to be ready for his arrival. In Bombay his Royal Highness will occupy a suite of apartments in Government House, Parell, and these are being refurnished for the occasion by Messrs. Deschamps, of Madras. As Indian styles of furniture are scarcely consonant with European notions of comfort, that known as the Louis XVI. style has been selected; but a much more Eastern character might obviously have been given to the carvings, while native textile fabrics might also have been much more largely employed both for the coverings and draperies. The woodwork is principally carved black wood—of course, with the Prince's plumes and badge appearing everywhere—although Chittagong mahogany is also used. For the sitting-room at Parell a handsome ottoman, two sofas, four arm-chairs, four easy-chairs, and a host of other chairs have been constructed. The covering is of faint bluish grey satin cretonne, of French manufacture. The pattern represents large vases in sapphire and gold, filled to overflowing with flowers of every hue, and the stiffness of the design is relieved by wreaths and creepers, which surround the vases and ramify in every direction. Besides the articles above mentioned for this room have been manufactured a pair of pier

ables, an *étagère* with glasses, a chiffonier, the usual round table, and a pair of what are known in India as tea-poys. Two massive wardrobes have been made for the bed-room and dressing-room, and the hangings are of faint lake colour, throwing into strong relief ribbon-bound groups of musical instruments—not tom-toms, but guitars, flutes, and trumpets—alternating with vases of richly-coloured flowers, round which gaily-plumed birds flutter through an intricate net-work of creepers and wreaths. Although India is a land of carpets, the native manufactures have been discarded, and that in the drawing-room is a fine velvet pile of European make, while the bed and dressing room floors are covered with good Axminster.

In Madras the Prince will occupy the suite of rooms in Government House usually reserved for the Governor, and these also have been partially refurnished by the same firm in a similar style. They have devised a peculiar sofa for the drawing-room, which, in addition to the ordinary large seat, has two lounging seats, one at either end of the couch, forming a sort of tripartite sofa. The whole of the woodwork is richly carved, the centre piece showing the Prince of Wales's plumes rising into a prince's coronet. The coverings are to be of silk; but when the last mail left, the colour had not been decided upon, as it would necessarily have to be in keeping with the decorations of the room, which had not been begun. The pier-table is to be the *chef-d'œuvre*, and local report says it will cost 120*l*., and the trade description is, that the framework will be very rich, "with massive reversed foliage at the base of the columns, ornamental capitals with falling flowers, while from corner to corner, at the top, will be a doubly-looped wreath, the whole surmounted by the Prince's feathers, with coronet and motto. From each of the four feet a bracket will form a graceful sweep, until the four meet in the middle under the table, and support an elaborately-carved urn, which is imbedded in graven flowers in very great detail." Whether this design was suggested by anything celestial, terrestrial, or infernal, we know not; imaginative readers can try to realise it for themselves, while prosaic folks will be glad to be spared similar details with the lamp-stands, chairs, tables, &c., which are in keeping with it. The Prince's bedstead is chiefly noticeable for its massiveness,—rather an unusual feature in Indian beds,—and bears on its cornice the inevitable feathers and coronet. A couple of wardrobes and a lot of chairs complete the furniture, and a new white marble bath has also been provided in one of the two dressing-rooms. The banqueting-hall is to be made very brilliant; all the furniture is being regilt and re-covered with crimson Utrecht velvet, and, in addition to the large chandeliers, 150 two-light wall-brackets are to be filled up. The portraits of her Majesty and other celebrities which decorate the apartment are to be reframed; and altogether it is estimated that the expenditure on Government House, Madras, will not fall short of 3,000*l*.

It is said that the durbar for the reception of the Rajpootana chiefs will be held at Agra, and not at Ajmere, as was originally contemplated. Consequently, it has been decided to have a great illumination, which will even throw into the shade the display which was made two years ago when the Viceroy visited the city. Not only are the palace and the public gardens being prepared for such a lighting-up as has never been known before, but the whole city, in every lane and street, will be brilliantly illuminated. Every shop in the main street will be re-painted in the gayest colours, and hung with banners and crossings of the gaudiest hues. The public treasury will contribute 10,000*l*. towards illuminations and fireworks only.

Since we are on the topic, it may be stated that the latest bit of native gossip is that Sir Jung Bahadoor has got a splendid specimen of a Royal Bengal tiger in training to be shot by the Prince of Wales. The *Madras Mail*, to which we are indebted for this piece of information, adds:—"It is being carefully fed and groomed, and on the day that it will perform its part in 'realising the dream of a life,' it will have its claws gilded, and be otherwise decorated for slaughter."

A Vacant Professorship.—News has been received at Calcutta of the death of Mr. J. M. Scott, professor of civil engineering at the Presidency College, on the voyage to Australia, where he was going for the benefit of his health.

FROM MALTA.

The port-town, viewed from the sea, is remarkably picturesque. Its white houses, each with a green wooden balcony supported on bold stone consoles, rise, tier above tier, from the beach to the Strada Reale, the curtains of its forts encircle the high places on every side, domes and spires seem to crowd the island, and the whole scene lighted up by the brilliant costumes of Oriental inhabitants, presents a contrast and a harmony which satisfies the most exacting observer, and is peculiarly delightful to eyes weary of the waves. The architecture is similar to that of southern Italy, though the varied fortunes of the place have favoured the introdution of foreign elements, which give a weird charm to some few spots. Building operations are proceeding with activity, and there is still room for a judicious use of capital. A new town is rising inland, towards the east, and churches continue to multiply. This latter idiosyncrasy of Malta's, for such it is, has been produced by the priests, who adopt the following ingenious method of putting their doctrines into practice.

When a bricklayer, carpenter, or other person engaged in the building trades, strays from the narrow path of discipline, the penance assigned him is to devote a certain number of Sundays and other feast-days to the building of a specified church; when a landholder falls into error, he must give a site; and woe to the frail owner of forests and quarries; when a man possessed of wealth and not otherwise qualified to lend his help transgresses, he is requested to pay down a lump sum. Thus through the zeal of the Roman Catholic clergy for the chastisement of her erring children, and the consequent glory of the Church, the Maltese seem likely to be provided before long with a church a piece. It is not known who are the architects; perhaps some of those gentlemen who occasionally supply designs for charitable institutions, free of charge, had better go to Malta.

The long-talked-of restoration or reproduction of the Opera House, burnt down a few years ago, is now in progress under the direction of Mr. Paulson, C.E. It is annoying to find so much architectural practice in the hands of a profession unqualified for the work, but undoubtedly possessed of superior enterprise. This building is one of those which give "Goths" an excuse for denouncing the Classic style as cut and dry: it consists of a Corinthian colonnade, &c., with two stories of windows between the columns; no one, however, could quarrel with an estate-agent for describing it as a "noble pile," suitable to more purposes than we can stay to enumerate.

No one should land on the island before he has read Colonel Potter's "Knights of Malta."

A YEAR'S BUILDING IN GLASGOW.

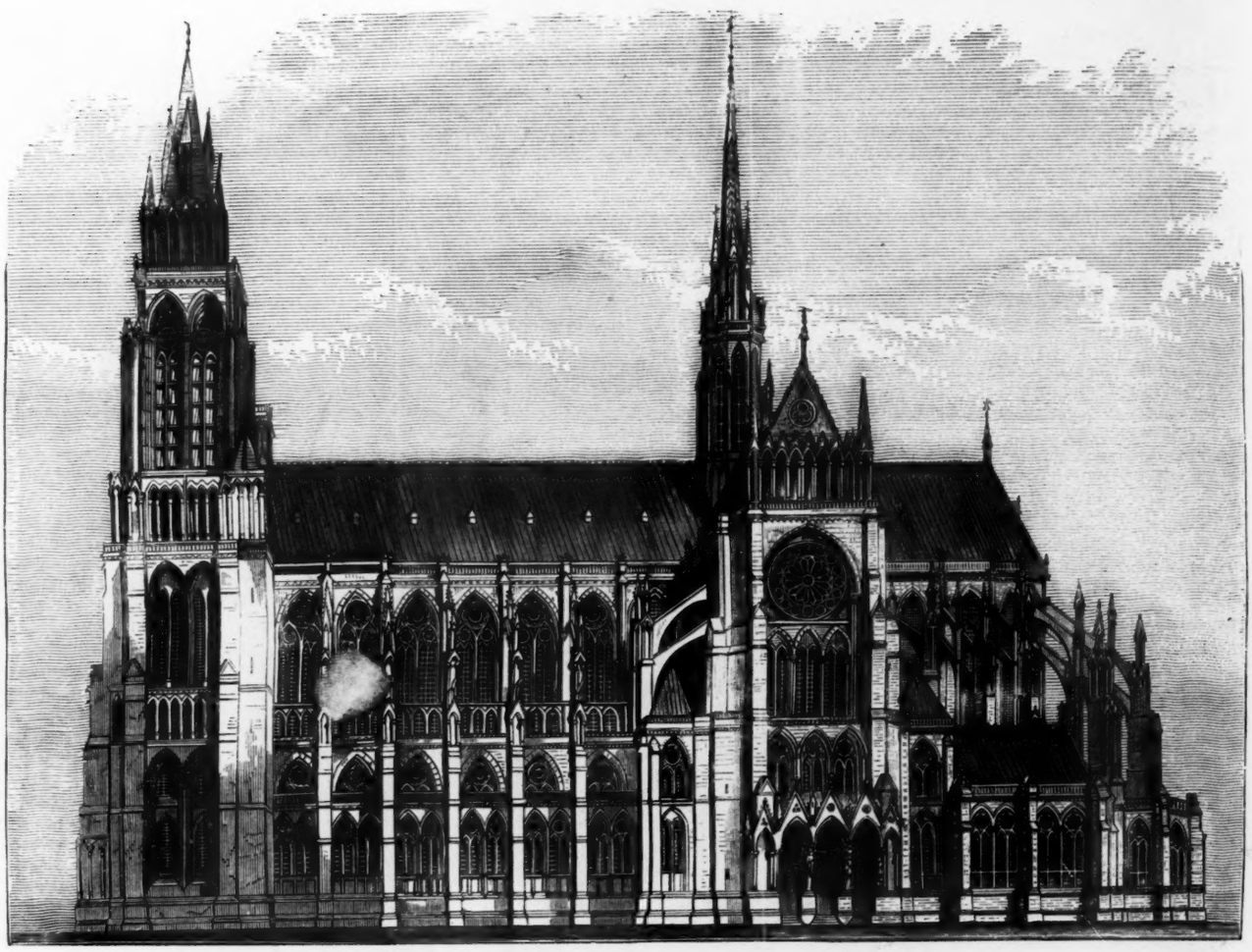
The official year of the Glasgow Dean of Guild Court, which is the local authority for granting "linings," or permissions to erect new and alter existing buildings within the city, was brought to a close on the 23rd ult., when Mr. King, the Lord Dean, made a statement as to the work sanctioned by the Court during the past twelve months. The number of linings passed for houses and shops in the central district during the period named was only three, but the property to which they referred amounted in value to 13,500*l*.; in the western district there were twenty-one linings, the value of the property being 172,100*l*.; eastern district, forty-six linings, value 293,200*l*.; southern district, forty-three linings, value 405,850*l*.; northern district, thirty-six linings, value 245,500*l*., and St. Rollox, twenty-two linings, value 128,700*l*., making the total number of applications passed 171, representing an aggregate value of 1,258,850*l*., as against 140 linings, and a total value of 707,300*l*. for the previous year. This he proceeded to point out was a very large increase, and was most observable in the southern district, where the value of buildings for houses and shops was two and a half times as large as in the western portion of the city. Comparing the figures of this and last year relating to churches, halls, and schools, he found that this year the number of applications passed was forty-five, representing a value of 130,350*l*., as against twenty-one last year, which amounted in value to the larger sum of 201,300*l*. For warehouses, stores, and shops this year, the applications numbered 201, representing 176,000*l*., while last year the number was 202, and the value of the property, 242,100*l*. The applications for alterations and additions this year numbered 240, representing 260,000*l*., while last year the number was 196, and the value 184,000*l*. The total number of applications of all kinds which passed the court was 676, representing in value 1,826,000*l*., as against, in 1874, 578 applications representing in value 1,345,800*l*., and in 1873, 591 applications, the value being 1,210,000*l*. Thus it might be safely said that during the past year considerably more business had passed the court than in any preceding year, and he was happy to be able to say that after consultation with those who were well able to speak on the subject, the character of the erections during the past twelve months was certainly not inferior. No doubt where so many buildings of different classes had to be erected, there must be good, bad, and indifferent; but by the careful attention and practical skill of the master of works and the "trade's liners" (or practical men connected with the court), to whom they were much indebted, no plans passed which did not furnish, if properly carried out, thorough ventilation and thorough security to the lives of those who might occupy them. After the plans passed from their hands, of course it was absolutely necessary that a very strict supervision should be exercised to see that the plans were adhered to, and it was with very great pain that the court had had occasion from time to time to inflict larger or smaller fines on parties who had not adhered to their linings. The deviations in many cases were very important, and such as made it absolutely necessary for a very strict scrutiny to take place, and he was glad to think that the scrutiny which was so much required was very actively carried out. During the past year no one could have sat in the chair he occupied without seeing that many improvements might be made even upon that so-called immaculate Act, the Police Act of 1866. He would not occupy time by referring to these in detail, but was glad to find that in one or two cases the suggestions of the "trades' liners" were adopted by parties who saw it was not their ultimate real advantage to adhere strictly to their rights. The dean concluded by thanking those who during the year had been associated with him in conducting the business of the court.

AVONDALE PARK, OLD KENT-ROAD: NEW BUILDINGS.

A plot of land, between four and five acres in extent, situated on the north side of the Old Kent-road, and bounded by the South-Eastern Railway, has just been laid out for building purposes, and upwards of 200 houses of a good character are intended to be erected on the land, which is called Avondale Park. About one half the number of the houses to be erected will be carried round the area of the estate in the form of a crescent, and the remaining portion will be erected on each side of streets in the centre. About one-third of the entire number of houses intended to be erected are already completed, and several of them occupied, whilst several others are in progress. The builders are Messrs. W. & F. Croaker and Mr. H. J. Searle. A new church (St. Philip the Evangelist) has just been erected on a portion of the land, and was consecrated and opened for service last week by the Bishop of Winchester. The church, which is built of Kentish rag, with Bath stone dressings, is Gothic in character, and will ultimately have a tower and spire at the south-east angle. Mr. Coe is the architect, and Mr. Nixon, of Old Kent-road, the contractor. The cost of the church is about 4,000*l*.

PROPOSED ROMAN CATHOLIC CATHEDRAL IN WESTMINSTER.

In our last we gave particulars of the cathedral proposed to be built in Westminster for Cardinal Manning. We now add a sketch of the building as designed by Mr. Clutton. The site is near the angle made by the meeting of Victoria-street and the Vauxhall-bridge-road. We may recapitulate that the entrance front will be 125 ft. or 130 ft. in height, and not less than 170 ft. in breadth. It will be flanked with two towers, each 50 ft. square, and pierced with three portals. The towers will rise to about 200 ft.; and at some future time they may possibly be surmounted by light spires which will rise to double that height. The nave will be 50 ft. in breadth, with double instead of single side aisles right and left. These will be separated from the central nave by seven arches, each of



THE PROPOSED ROMAN CATHOLIC CATHEDRAL FOR WESTMINSTER.—Mr. Henry Clutton, Architect.

which will be 22 ft. wide and 60 ft. in height. Of the side aisles the two inner ones will be each 24 ft., the two outer ones 20 ft. in width, the total span of the interior being 144 ft. Surmounting the arches of the nave at about 60 ft. from the ground will be a triforium running round the whole building from end to end. This triforium, again, will be surmounted by, or rather incorporated with, the clearstory, which will raise the total height of the nave inside to 125 ft. The inner portion of the double aisles will have above it a triforium and a clearstory of its own. Each transept will have an aisle running parallel to it. The dimensions of the edifice will be as follow:—Length, 400 ft. (the same as that of Westminster Abbey); breadth, 144 ft.; height, 130 ft.

THE BELL-TOWER AT EVESHAM.

Our readers may remember that, at the last Congress of the British Archæological Association, held in Evesham, a discussion arose concerning the real date of the bell-tower there, always attributed to Abbot Lichfield, who received that office in the year 1513. The Rev. Mackenzie Walcott, in a paper then read, brought documentary evidence to show that, so far from this being the case, it was built about a century earlier, probably by Abbot Zetten, in which view he was supported by Mr. Parker. The question excited considerable interest, and the architectural members of the Association who happened to be present met on the spot the next morning, and agreed unanimously, on the evidence of the building itself, that the ordinary belief was correct. In this we fully agree, and the tower being a noble one, and amongst the latest works in the Gothic style in England, we give a view of it,* and append some documentary evidence on the subject. Thus, Tindall, the historian of Evesham, says*:—

"Clement Litchfield, before prior, and a man who cannot be mentioned without emotions of pity and reverence, was made abbot of Evesham on December 28, 1513. . . . . Both the learning and virtues of the man were admirable. He was a munificent patron to his convent, and laid out much money in repairing old buildings and erecting new ones. He adorned the choir with much elegance and splendour; *built a very handsome tower in the cemetery, which still remains entire;* and added two chapels of extraordinary beauty, one to St. Lawrence's Church, and the other to All Saints. . . . He continued abbot till near the dissolution; and then, not choosing to surrender his abbey to the king, was, by the vile arts and low devices of Cromwell, obliged to resign his pastoral office to Philip Hawford, *alias* Ballard, a young monk of Evesham, who was, in the year 1539, created abbot, for the sole purpose of surrendering the abbey. This he did on November 17, in the same year. The grief and indignation of poor Litchfield, who survived this catastrophe but a short time, may easily be imagined. It may, without exaggeration, be supposed to have broken his heart. He died at, or near, Evesham, and was buried at the entrance into his own chapel, in the church of All Saints, where there is still to be seen a large blue slab, which protected his remains, but of which the inscription is now entirely defaced. The following was put up in his lifetime, in a window of the same church:—'Orate pro anima Clementis Lychfeld sacerdotis: *cujus tempore turris Eveshamæ ædificata est.*' This inscription also has long disappeared."

Again, speaking of this tower, Tindall says it is one of the finest specimens of architecture "left by our Popish ancestors in the whole kingdom, and is likewise allowed to be one of the latest, if not absolutely the last."

Gough speaks of this tower as "the last building erected by Popery in England."

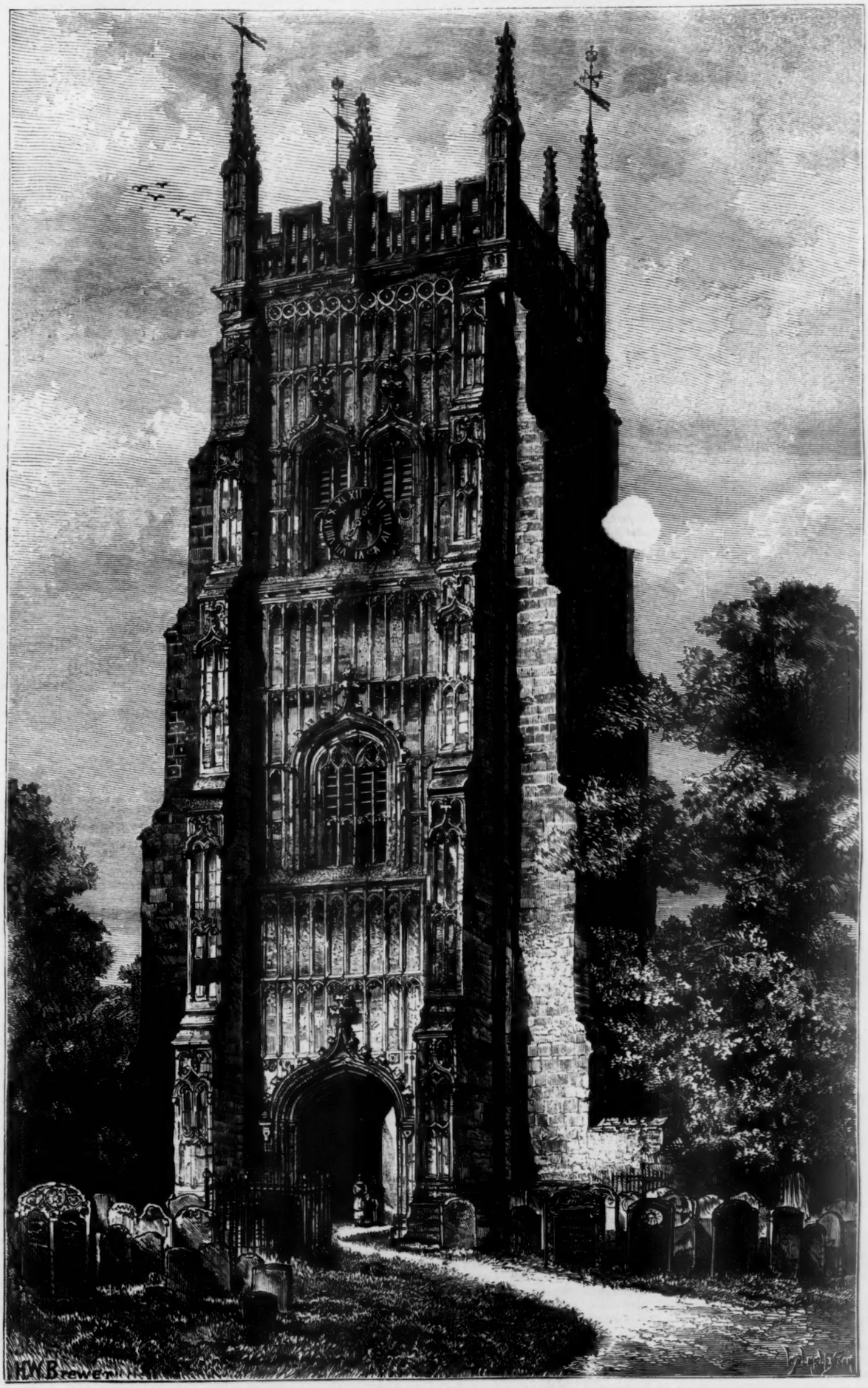
Habington, who wrote in the time of Charles I., gives the following account of the chapel and tomb of Abbot Lichfield:—

"About the middle of the south aisle (of All Saints' Church) is a curious building called Lichfield's Chapell, in whose embowed chapell is a scutcheon, with the letters of gold, C.P.L.; and on another the lock and chain, ensigns of the Abbey of Evesham. At the entrance of this chapell lyeth humbled on the ground the resemblance of an abbot, truly great in leaving the dignity of his high place; and wise, when foreseeing the storm which overthrew this with other religious houses, he struck sail to avoid shipwrack. His resemblance is engraved at the altar in prayer. On his right hand, "*Deus in nomine tuo salvum me fac.*" On the left, "*Et in virtute tua judica me.*" Below, on one side, "*Quia in inferno nulla est redemptio.*" On the opposite, "*Miserere mei Deus, et salva me.*" Underneath his feet an inscription, which was also painted on one of the windows:—"*Orate pro anima domini Clementis Litchfield sacerdotis, cujus tempore nova turris Eveshamiensis ædificata est.*"

It is only right to say as respects Mr. Walcott's statement that he considers these records applied to the central tower of the Abbey, and not to this. The building itself, however, settles the question. Amongst the obvious indications will be noticed:—1. The general squareness of treatment; 2. The use of the four-centered arch; 3. The drip-stones of the archway; and 4. The great similarity to the chapels built by Lichfield attached to the churches of St. Lawrence and All Saints.

* Our drawing was made from a fine photograph, produced by Mr. Earl, of Worcester.

* History and Antiquities of the Abbey and Borough of Evesham. By W. Tindall, M.A. (Evesham, 1794.)



THE BELL-TOWER AT EVESHAM.—*Sixteenth Century.*

THE QUEEN'S PARK ESTATE, HARROW ROAD.

The tract of land in the Harrow-road called the Queen's Park Estate, consisting of eighty acres, which was lately purchased by the Artisans' and General Dwellings Company, is now being laid out for building purposes. The roads are in course of formation, and the drainage of the several streets is already completed, and the company will shortly commence the erection of the different classes of houses intended to be built. The total number of houses to be erected, it is stated, on the estate is upwards of 2,000, in addition to schools, a lecture-hall, and baths, and three acres of land in the centre of the estate will be appropriated to recreation and pleasure grounds, and is now being ornamentally laid out for that purpose. The main frontage of the estate is in the Harrow-road.

It has been decided that the houses shall be built in four classes, so as to accommodate the varied requirements of the purchasers or occupiers. The different classes will contain five, six, seven, and eight rooms respectively, the eight-roomed houses to have a bath-room, and the probable weekly rental of the three smaller class of houses will not exceed from 5s. 9d. to 8s. per week, including taxes. The rental of the best class of houses has been fixed at 26*l.* per year, exclusive of taxes. Upon a calculation which has been made as to the cost of building, the purchasing price of the house will range from 170*l.* to 310*l.*, on a lease of 99 years, subject to a small annual ground-rent. The first batch of houses to be erected on the estate will be about 500 in number.

WARMING, VENTILATION, AND LIGHTING.

The first of the lectures in connexion with the Sanitary and Educational Exhibition at Brighton was delivered by Captain Douglas Galton, C.B., who had undertaken to speak of those matters in it which related to warming, ventilation, and lighting.

Captain Galton commenced by directing attention to the sanitary principles which should guide the inventor in his design, because so far as this exhibition was concerned, the merits of the several inventions rested upon their fulfilling sanitary conditions. In sanitary science it may be broadly stated that pure air was essential to purity of blood, and that pure air consequently afforded the best safeguard to enable the human frame to resist attacks of epidemic disease. Directing attention to a class of apparatus for the preservation of pure air in our homes, and to the prevention of pollution of external air by smoke, the speaker pointed out that the temperature of the body was about 98° Fahr., and the tendency of the surrounding air was to cool down the body, which, if carried too far, was productive of disease. Thus, whilst requiring ventilation for providing pure air in dwellings, the ventilation must be combined with warming. Ventilation could only be accomplished by the creation of currents of air,—one to remove the air of the room, and the other to bring in fresh air, the amount of fresh air required in an occupied room being very considerable. A space occupied by six persons would require 11,200 cubic feet of air to be passed through in order to keep the atmosphere sufficiently pure for health; or, in other words, the air of the room ought to be removed and replaced seven times in an hour. In such a room so inhabited it would be very difficult to provide any means of warmth within the room which would counteract the repeated cooling down which an adequate amount of ventilation by means of cold air would create. The inflowing air should therefore be warmed, otherwise every means would be sure to be taken by the occupants to shut out fresh air rather than to encourage its inflow. The methods of warming houses in general use might be classed under (1) Open fire-places of one sort or another; (2) Hot air carried in flues from some central source of heat; (3) Hot-water pipes or steam pipes carried round the house from a central boiler. In this exhibition the first mode of warming, viz., by open fire-places, was the one which appeared to preponderate. With an open fire-grate of ordinary construction the warmth in the room was derived from the direct radiation of the fire. The greater the draught up the chimney, the greater the inflow of cold air to replace that removed, and the greater inducement to make the fire blaze to increase the radiation. But the more the fire blazes the faster is the draught up the chimney and the consequent removal of air from the room. Therefore, the tendency of the open fire is to accelerate the evils which it is intended to remove. There was a novel apparatus, well worthy of examination, exhibited here by Mr. G. B. Sharp, by which he proposed to place the fuel in an iron movable grate or cradle, provided with a cover. Amongst the warming apparatus exhibited, some are designed to use gas, and others to consume mineral oils. The characteristics of these he explained at some length. Gas was useful for heating purposes in many places, but it contaminated the rooms in which it was burnt largely. The apparatus for lighting by artificial heat was not very fully represented in the exhibition, but the mineral oils, besides the gas, deserved consideration. Mineral oils are about as cheap as gas, but it is not probable that they will ever supersede the use of gas. As to other sources of artificial light, magnesium was too costly to rival gas, and its dazzling brilliancy rendered its application very difficult for domestic use. Such was also the case with the lime light and the electric light, but the broad fact remained that the present modes of obtaining artificial light were clumsy, and he trusted that it might not be long before some new system of artificial lighting was produced. Having thus briefly explained some of the leading principles which affect health in the warming, ventilating, and lighting of buildings, Captain Galton proceeded to point out the apparatus in the exhibition which appeared to deserve especial mention.

THE NEW YORK POST OFFICE.

The New York Post Office is just now completed. The new building, which has cost over seven millions of dollars, is nearly in the centre of New York; has a frontage of 900 ft.; the floor is an area of over 600 square yards. The sub-basement is 12 ft. high; the basement, or cellar, 17 ft. high; the first story, 30 ft.; the second, 26 ft.; the third, 22 ft. 9 in.; the fourth, 22 ft.; and the attic, 19 ft. high. The cellar is occupied by eight boilers for heating purposes and motive power, with engines, coal-bunkers, and lumber-rooms. The basement, which is an immense apartment, extending under the side-walks, is the room for receiving and managing heavy packages and newspapers, &c. To this room all mail-bags and parcels are lowered from the first or ground floor, where the wagons deliver them. For this and other transfer business there are fourteen elevators, of which ten are exclusively for mail matter. The first story is the place where the mail-wagons deliver their loads. Ten wagons can load or unload at the same time. The building above this story is devoted to offices, giving ample quarters to the five divisions under Postmaster James, the cashier's office, the mailing and distributing department, the city delivery, and the money-order office. The incoming mails are received from the wagons on the first floor, the newspapers being sent down to the basement by shoots, while the bags of newspapers only are lowered by elevators. The letters are distributed to carriers, general delivery, or key-boxes, on the first floor. The newspapers are handled below.

There is a drop for each of the thirty-seven States in the Union, and below each of these is an opening for each principal city in the State. This helps the distributors, and enables the outgoing mails to be kept open fifteen minutes later than hitherto.

The general delivery has six windows. The key-boxes number 5,795, with 520 drawers ranged below the boxes for larger mails, such as the newspapers and larger business houses. There are besides 360 newspaper-boxes for the use of the mail service to facilitate the delivery of papers. About 5,000 of the key-boxes have already been taken, the price paid being 4 dols. a quarter, which goes to the public. The salary of the postmaster is 6,000 dols.; in all there are about 1,000 persons employed in the office. The average number of letters received and distributed daily by this office is 225,000, and the mail matter received daily is about 120,000 lb. Inside the office there are three sets of newspaper men, and, unlike our English post-offices, newspapers are treated like letters. The style is Renaissance, with Mansard roof. It contains 350,000 cubic yards of granite, 20,000 yards of concrete, 45,000 barrels of cement, 16,000,000 bricks, and 19,000,000 lb. of iron. The roof, constructed of slabs of slate, with 1 in. thick at the lower edge, and ¼ in. at the upper, weighs 888,000lb.

DESTRUCTION OF THE TERMINUS OF THE EASTERN BENGAL RAILWAY.

The floods have completed the work which they began last year, and have ended by sweeping away the Goalundo, or Northern Terminus of the Eastern Bengal Railway. This line was constructed to convey the produce of the fertile valley of the Ganges to Calcutta, and the terminus originally selected was Kooshtea, about forty-five miles further up the stream than Goalundo, and distant about 107 miles from the Presidential capital; but it was subsequently thought that if the large traffic in goods derived from the boats plying on the Ganges was so valuable it would be worth while to establish a similar port on the Brahmapootra, and the end of the deliberations was the construction of the Goalundo extension. Plenty of people foresaw the danger—but, not for the first time, the desire for profit prevailed over plain common sense. In India the confluence of two large rivers subject to violent floods has always been considered a perilous point. The flood in one river rises above that of the other, and a consequent disturbance takes place in the currents, causing changes in the channels and frequently erosion of the river banks, which the peculiar nature of the soil encourages. So great are these changes sometimes that the entire geographical features of a district are altered. The whole system of the Eastern Bengal Railway runs through a country liable to inundation, and perhaps this very familiarity with danger encouraged its engineers to construct this extension at the confluence of two such mighty streams as the Ganges and the Brahmapootra, relying on their success in staving off danger in other quarters. The station was built, a town grew up around it, and for a time all went well. But it became evident that the immunity of the place from misfortune was only temporary, and a spur was thrown out into the Ganges for 500 ft. to protect the terminus. The work was costly, for it consisted of a massive construction of rubble and concrete blocks protected by a solid stone apron, and connected with the shore by an embankment of brick ballast with a clay hearting. Last year the floods were unusually heavy, and the effect of these precautions was watched with much interest At the close of the season it was found that the end of the spur had subsided considerably, but that it had curbed the force of the stream which had been diverted 300 ft. from the south bank. This year the water rose higher and flowed swifter than before, and the Ganges has now ended by sweeping spur and terminus and town away. Happily by the forethought and activity of the local authorities and engineers employed upon the line, the inhabitants of Goalundo had been moved in a body, and, so far as movable materials are concerned, the property of the company has also been saved from the general destruction. It is, however, too much to hope that Indian contractors and engineers will learn the lesson of the disaster, or that they will in consequence abandon their persistent habit of building bridges and constructing great works without accurately calculating the natural forces with which they will have to cope. The calamity is only one added to many, and it is by no means the last of a long and terribly expensive list.

THE PAVILION SYSTEM OF PLANNING WORKHOUSES.

Sir,—In your last number you state, with reference to the proposed new workhouse at Sheffield, that Mr. Hall, the architect, had reported adversely to the pavilion system of planning, which had been suggested by the Local Government Board, on the grounds that such a system was considerably more costly, and required a larger area of site than the corridor system.

As I believe that, before coming to this decision, the Sheffield Board of Guardians and their architect had visited the Lambeth New Workhouse, designed upon the pavilion system, and of which I was one of the joint architects, perhaps you will kindly allow me to correct any misapprehension as to the relative advantages of this and the corridor system.

I will take Mr. Hall's objections first. He states that the pavilion system involves an

increase of 20 per cent. in the cost. This can be very easily answered. This system, in the first place, requires considerably less corridor, which being necessarily of fire-proof construction, is a heavy item of cost; and, in the second place, it admits of the erection of double wards, having four rows of beds. These double wards are not practicable in the corridor system, and can be built at a less cost per bed than single wards, having a proportionately less quantity of walls, windows, &c. In short, so far from being more expensive, I have found, by experience, that this system effects a saving of from 5 to 10 per cent. in the cost.

So far as regards the suggestion that the pavilion system requires a larger site, I have no hesitation in stating that I have found it quite the reverse. Indeed, the arrangement in blocks of a moderately large workhouse will be found more compact, and covering a less area, than if arranged as one long range of building, and a visit to the Lambeth Workhouse, or an inspection of the plans, would convince any one of this. Moreover, in this particular case it was necessary to leave as much land as possible for a future infirmary, so that in the competition of designs, in which the competing architects were free to adopt either system, any plan which occupied an excess of area would have stood no chance of success.

Much more, however, can be said beyond answering objections to the system. The distribution of the several wards and departments in a series of pavilions, or blocks, standing parallel to each other at distances of 60 ft. to 100 ft., is the only arrangement which admits of the wards having external windows on opposite sides, thus insuring *through* ventilation, as it is obvious that wards placed sideways on one or both sides of a continuous corridor cannot be so treated. And further, it admits of the lavatories, water-closets, and bath-rooms being placed at the extreme end of the ward, with a free current of air around three sides.

Another great merit of the pavilion system is that it admits of a more complete classification of the inmates; the several classes of aged, able-bodied of good character, and able-bodied of bad character, being housed in separate blocks, each with its own staircase, airing-grounds, and conveniences. This insures a much better description, and renders the "house" a stricter "test."

A very grave defect in the old system is the inevitable corridor, of great length, having wards on both sides, and being but very imperfectly lighted and ventilated. From this corridor there generally leads, not only the wards, but the bath-rooms, lavatories, and water-closets. A visit to almost any large workhouse built from ten to fifteen years ago will reveal these defects in all their hideousness.

Not to occupy any more of your valuable space, sir, I will end this letter by claiming for the pavilion system, as applied to workhouses, a great superiority in respect of cost, ventilation, classification, lighting, separation of the sexes, and compactness of plan.

Thos. W. Aldwinckle.

THE BLOCK IN THE NEW PUBLIC HEALTH ACT OF 1875 CONSIDERED.

The Public Health Act of 1875 would appear, from the proceedings of the Rural Sanitary Authorities in various districts in the north of England, where so much needed, to be obscure.

The part of the Act which immediately concerns builders is that which shows whose duty it is to put in sewers; and here considerable differences of opinion have arisen.

The 15th clause of the Act recites,—"Every local authority shall keep in repair all sewers belonging to them, and shall cause to be made such sewers as may be necessary for effectually draining their district for the purposes of this Act." No doubt this clause confers power on the authorities to make the sewers, but it does not settle who is to pay for them. Supposing a large quantity of land is laid out in building sites in agricultural districts, who is bound to provide the main drainage for it? A case has arisen thuswise:—Lord Boyne and other large landholders have laid out extensive tracts of agricultural land as building-ground, and have demanded that these lands be drained at the expense of the general body of ratepayers. The length of the streets, as shown by the block-plans of Lord Boyne and Major Cochrane, are 9,854 yards, or nearly six miles of sewers—according to the measurement of the surveyor. In order to render this land suitable for building purposes, the sewers would have to be 5 ft. deep, at an estimated cost of 1*l.* per yard. If the sewers have to be constructed by the ratepayers, they would not be made for anything like that sum, for the money would have to be borrowed; and in that case the Local Government Board would step in and compel the ratepayers to drain the cellars. It is also urged that if this be carried out, it would be years and years before all this land could be built upon, as the ratepayers would be in no particular haste to make the sewers.

AN ENGLISH CHURCH AT ST. SERVAN, BRITTANY.

A new church has been built by the English residents at St. Servan, Brittany, near the port of St. Malo. Hitherto a small chapel has been rented, but this had long been found to be inconvenient, and too small for the increasing English population. The new building, which was used for the first time last Sunday week, will accommodate about 300 people, and consists of nave (without aisles) and sanctuary. A wooden screen divides off the westernmost bay, forming an entrance-lobby, and, with another smaller screen, a vestry, and it may eventually be used as a support for a small west-end gallery. The building is an instance of a remarkably cheap church, the total cost being less than 1,000*l.*

Freestone, being costly in the neighbourhood, is very sparingly used. The walls stand upon a granite plinth, and are formed of the *maçonnerie ordinaire* of the neighbourhood. The east and west windows are filled with tracery, and the side windows are coupled lancets. The roof is pitched at an angle of 45 degrees, and has curved principals and collars. The works have been carried out by Mr. Saunders, of Jersey, from designs by Mr. W. Niven, the masonry being done by French workmen, and the carpentry and joinery by men from Jersey, both being much less expensive than in England.

NEW BANKING PREMISES AT MIDDLESBROUGH.

A substantial block of buildings, for Messrs. Backhouse, was opened for business last week. The site, a corner one, measuring about 82 ft. by 66 ft., is one of the best in the town, being close to the new railway station, now in course of erection. It has been erected from the designs of Mr. G. G. Hoskins, of Darlington.

The buildings, which embrace the bank itself and a manager's house at the side, are built entirely of rubbed ashlar, with moulded segmental pointed doors and windows, the latter on the ground-floor being filled in with ornamental wrought-iron grilles. The floor above the bank portion, which is of fire-proof construction by Messrs. Dennett, of London and Nottingham, is devoted to suites of offices.

The interior of the banking-room is somewhat novel in treatment; instance the arcade between the public and the cashiers, which appears to have been adopted to meet the requirements of the fire-proof arrangements.

The contractors for the work have been:—brickwork and masonry, Mr. Jackson, Middlesbrough; carpenter and joiner's work and fittings, Messrs. R. Robson & Son, of Durham; slating, Mr. George Pattison, Darlington; plastering, Mr. R. M. Ormerod, Carlisle; plumbing, glazing, &c., Mr. Hudson, Middlesbrough; the carving was executed by Messrs. Farmer & Brindley, of London; strong rooms, doors, and safes, by Messrs. Chubb; metal work, Mr. Siddell, Darlington; gas-fittings, Messrs. Russell & Sons, Darlington; principal chimney-pieces, Messrs. J. Priestman & Sons, Darlington; and tile pavements, Messrs. Maw & Co. Mr. Hindmarch acted as clerk of the works.

TOWER OF ST. ANTHOLIN, WATLING STREET.

Sir,—As this tower appears to be in no little danger at utilitarian hands, may I suggest through your columns, that if a clock, and a really good set of chimes (not the ordinary ones, but those "silvery chimes," which lend such a charm to foreign cities) were added, the plea for its retention would be greatly strengthened, and a boon would be conferred on the public generally. Few Englishmen who have had the opportunity but must have been struck with the singularly exhilarating effect of such chimes in the midst of the stern, matter-of-fact round of daily life in a great city.

G. McD.

A RECTOR'S DEFENCE OF THE ECCLESIASTICAL DIPAPIDATIONS ACT.

Speaking at the Church Congress at Stoke-on-Trent last week, in the discussion which followed the reading of Mr. Rowe's paper (*Builder*, p. 911, *ante*) on the Ecclesiastical Dilapidations Act, the Rev. C. F. C. Pigott said he had made trial of the Act. He believed when it was better understood it would be appreciated as a great boon, especially to the poorer clergy. The old state of the law had received a very bad character, and the new might be compared with the old to its great advantage. Under the old law a clergyman who allowed his holdings to fall out of repair was liable to a criminal prosecution, and almost anybody might proceed against him. This blot has now been taken from the Statute Book, and a much milder process substituted for it. If a clergyman allowed his holdings,—*i.e.*, the property of the Church,—to fall into decay, the bishop was directed by the Act to write and admonish him to put them in repair. If he consented and did it the matter was at an end. If he refused, the new law might be put in force against him, as might the old law in the previous state of things. But in the new it was a civil process; in the old a criminal one. He need not say which was best for them. What made the new Act unpopular was its not being understood; next, the great increase of late in the expense of building. Further, the surveyor's fees not yet having been put on the moderate footing which they would soon occupy. He felt sure when this was done (and it would be done soon) the average cost of the surveyor would be, he had no doubt, from five to seven guineas. This would be all a clergyman would have to pay during the whole tenure of his benefice, except in the rarest cases. He might of course call in the surveyor every five years if he liked, but the Act did not require this except in sequestrated benefices. But the great boon to the poorer clergy was the privilege of borrowing for their repairs, and charging the loan on the benefice. English law had never, he believed, given this boon to tenants for life before,—landowners, being tenants for life, could borrow money at 5 per cent. to drain and build, but never to repair. English law had been greatly stretched in this Act to benefit the poorer clergy, and the Act required that they were not to be charged over 4 per cent. for a loan. It was a great boon, especially to a poor man entering on a benefice with many expenses of furnishing, &c. Let them make this power to borrow a full reality, by bringing to bear some pressure upon the governors of Queen Anne's Bounty. But let them not be led astray from their own interest by persons ignorant of the Act. There would presently be a reaction in favour of the Act, when it came to be duly administered. For his part, he greatly admired its main provisions.

STATUE TO A MAN FROM THE RANKS.

Last week a statue was erected to one of those representative men, who at the time he entered life was only a lonely, friendless boy, who toiling early and late at a bottle factory, died a member of Parliament for his native town, Sunderland.

The memorial consists of a full-length figure of about 8 ft. 6 in. high, elevated upon a pedestal measuring about 7 ft. 6 in. from the ground. The figure, which is composed of bronze, is so placed that the light from the south falls full upon it, and is represented holding a scroll in the hand as if about to address an assembly. The pedestal, which is composed of finely polished granite, bears the inscription,—"John Candlish, M.P.; born 1815, died 1874."

The base is of light shap granite finely executed, and the whole rests upon a substantial concrete foundation. The bronze figure was cast at Young's foundry, Pimlico, Mr. C. Bacon being the sculptor.

Sunderland is indebted to the deceased for its sanitary reform, that from being once a mass of fever and stricken lanes it has now for years past been a very healthy town.

The New Hospital for Aldershott.—A large number of workmen are already engaged making preparations for laying the foundation-stone of the new military hospital. The building will be on the plan of the military hospital at Woolwich, and will, when completed, cost about 30,000*l.* One wing, at a cost of 3,000*l.*, will be erected probably before the end of this year.

DEATH IN THE SEWERS.

Our attention has been called by more than one correspondent to such passages as these in the Agenda papers of the Metropolitan Board of Works:—

"That the sum of 20*l.* be granted to Thomas Jupp, lately employed as cleaner at the Crossness Pumping Station, who has been discharged from the hospital hopelessly blind."

"That Mrs. Helen Crichton be informed in reply to her letter apprising the Board of the death of her uncle, John W. Wilkins, late inspector of Flushers under the Board, and requesting the Board to grant her some pecuniary assistance towards the support of his daughter, who is left unprovided for, that the Board have no funds at their disposal for such a purpose."

Such entries occur so often that it becomes necessary to inquire whether or not the Board have taken any proper advice on the subject.

INVERNESS TOWN-HALL COMPETITION.

The plans sent in in competition for the proposed new town-hall in Inverness were remitted some months ago to Mr. David Bryce, R.S.A., to be reported on by him. At the meeting of the town council on the 6th inst. Mr. Bryce's report was read, as follows:—

"I have carefully considered the several competitive designs for the proposed town-hall at Inverness, consisting of forty-one drawings, along with the instructions given by the committee to the various competitors. I have also procured from Mr. Andrew Lawrie, a thoroughly qualified ordained surveyor, probable estimates of the cost of erecting such buildings, and, on the whole, have to report as follows:—

I am of opinion that none of the plans can be carried out for the specified sum, even with the additional rent capitalised that might be obtained for places and apartments not actually to be occupied for the business purposes of the town. I have valued the rental of the apartments shown on the different plans at about the same relative proportions, so as to arrive as near as possible at what would be the probable return from them. These amounts are embodied in Mr. Andrew Lawrie's report, dated September 30th, 1875, which is sent herewith.

The first set of plans, consisting of the drawings numbered from 1 to 11 inclusive, and with the motto "Let Honour Follow," is the best; and taking into account every expense necessary to render the building fit for occupation, I do not think it could be erected for a less sum than 15,091*l.* If however, the perspective elevation, marked No. 13, is adopted in place of elevation No. 11, it would cost less, say 14,112*l.*, both these sums being exclusive of architect's fees and clerk of works' salary, but including every other expense, painting, marbles, gasfitting, bells, street pavements, &c. I have only further to add that all the drawings are highly creditable to the several competitors, who must have bestowed upon them a great deal of labour and study. I will be glad to furnish any further information that may be required."

The design thus selected is by Mr. Lawrie, architect. Mr. Bryce's report was remitted to a committee for consideration.

NEW HOSPITAL FOR SHEFFIELD.

Mr. Thomas Jessop, a steel manufacturer, of Sheffield, has signified his intention of defraying the cost (22,000*l.*) of the erection of a new hospital for women in that town. At a meeting of the hospital committee, on the 4th inst., twelve tenders for the erection of the new building were opened. Mr. Jessop having intimated a preference for the tender of Messrs. John Chambers & Son, of Commercial-street, who offered to do the work for 16,250*l.*, their tender was accepted. This does not include the cost of heating apparatus and other matters, which, with the cost of the land, will bring the total up to 21,000*l.* To this, again, will have to be added the cost of furnishing,—all which Mr. Jessop proposes to defray. The plans of the building have been prepared by Mr. J. D. Webster, architect. Its style will be Gothic, and it will be built of brick, with stone dressings. The building, which on plan takes the form of the letter T, will have three stories, and will be divided into two distinct parts, although one roof will cover the whole. The main portion of the structure will be used as the hospital proper, but the wing abutting on Victoria-street will be utilised for the purpose of midwifery only, and will be entirely detached from the rest of the building. The ground-floor of the hospital portion will be set apart chiefly for administration and out-door patients. In the next story there will be four wards for the use of the in-patients. Two of these wards will hold five beds each, but the others will be only large enough to accommodate two patients in each. Bath-rooms and lavatories will be erected near the wards, and on the same floor will be the operating theatre. The upper story will have a similar disposition of wards, and will be designed to accommodate the same number of patients. The midwifery department of the institution will also contain three stories, the ground-floor being divided into a day-room for the in-patients, a consulting-room, and a sitting-room for the matron. The next story will comprise two wards capable of accommodating four persons, and the upper story one small ward, with bedrooms and other conveniences. The building has been designed with a view to the accommodation of about thirty-five in-patients.

THE TRADE UNIONS CONGRESS.

The eighth annual National United Trade Unions Congress, consisting of between one and two hundred delegates from all parts of Great Britain and Ireland, commenced its sittings on Monday last, in the Assembly-rooms, Crown-street, Glasgow. Mr. John Battersley, president of the Glasgow Trades Council, was elected president of the congress; and Mr. James Wilkie, of the Glasgow Trades Council, secretary. The business of the congress during the week will include discussions on the various Acts affecting labour, the composition and payment of juries, the election of magistrates, the Merchant Shipping Bill, arbitration in trade disputes, and the Patent Laws. Mr. Robert Knight, chairman of the Parliamentary Bills Committee, presided at the opening. The officials of the congress were afterwards elected. Mr. Howell read the Parliamentary Committee's report. The committee expressed their satisfaction with the passing of the Employers and Workmen Act, and the Conspiracy and Protection of Property Act, and with the tone of the speeches in the House on these Bills. They recognised the great value and importance of these new laws. Workmen being no longer under an exceptional criminal code, their emancipation was complete. The committee have prepared a memorial setting forth the amendments they desire on the Trade Unions Act, and expressing a hope that Sir Stafford Northcote will introduce a measure on the subject next session. The committee had always advised trade societies to register under this Act. While they felt the Compensation to Workmen Bill to be in the right direction, they objected to the limitation of time for preferring claims, to the limitation of awards to 200*l.*, to the deduction of sums contributed by employers to accident funds, and to the exemption of employers of fewer than ten persons. They advised that the committee should act in concert with any other body to get a satisfactory measure next session. The committee regretted that the Factory Act Commission did not include some one member acquainted with the condition of children, young persons, and women in wholesale and retail shops, whose practical knowledge would be of immense value. The committee were strengthened in this by the fact that the Commission had held a private sitting in Glasgow to hear the evidence of persons who would not otherwise come forward on the ground that some workpeople had been threatened with dismissal if they gave evidence. The balance-sheet from January to October showed an income of 549*l.*, and a similar expenditure.

THE ORGAN AT ST. MARY'S WOOLNOTH.

Sir,—"An Architect" is, I think, quite right in regarding the removal and rebuilding of an old organ, such as that by Schmidt in the above-named church, as an operation rather hazardous to the instrument. The old pipes often will not bear the knocking about consequent on removal, organ-pipe metal being generally comparatively soft, and not one of the most durable of materials.

The mere transportation from a gallery to the ground-floor is not, however, necessarily prejudicial to the effect of an organ, but rather the contrary, *unless* the organ is placed in a narrow and confined situation. That is almost always fatal to its effect, and that is unfortunately what is constantly,—in fact, all but universally,—done now. The removal of the St. Paul's organ from the screen to the position under the choir-arcade is a case in point; the deterioration of effect there was not the result, I conceive, of removing it to lower level, but of the confined situation. The great desideratum for an organ in regard to position is free open space all round it; and if this is ensured, a low position is no disadvantage to its tone, but rather the contrary, as it then derives increased resonance from the proximity of the floor; and, in fact, an organ in a gallery is often injured in effect by being too near the roof, and having the sound driven down on it, and the larger pipes partially smothered.

If the intention were to put the organ of St. Mary Woolnoth into one of those abominable receptacles called "organ-chambers," which architects persist in contriving to ruin the effect of an organ, every effort ought to be made to keep it where it is. But if a tolerably open and unconfined space can be found for it on the ground-floor, there need not, I think, be any apprehension of its effect being injured merely by the altered position, though its removal should be a matter for great care and caution.

H. H. Statham.

THE INSTITUTE LIBRARY.

Sir,—It appears that during the somewhat extended holidays of the officers of the Institute, the Library takes care of itself. One of the uses of the Library is as a place of reference to the serial publications connected with architecture, for those who wish to know all that is being said without taking in half-a-dozen publications, weekly or monthly. The other day the whole of these serials were in entire confusion, and the latest numbers not to be found in any case; in some cases they were a month in arrear. It would certainly seem possible that whoever is left in charge might be instructed to keep these papers in order, and see that each is put in its place as it comes in.

By the way, if you turn in to look at the week's papers on Saturday, they are never in the Library, but always have to be sent for from the secretary's office. As the journals are taken in for the use of the subscribers generally, and not for the secretary's private reading, this also is not quite the correct thing. A Member.

TELEGRAPH WIRES OVER HIGHWAYS.

The stipendiary magistrate (Mr. A. Bigge) of the Brighton Borough Bench was last week engaged some time over the hearing of a case, in which Messrs. Cramer and Co., the well-known musical publishers, were the complainants, and Henry Neale and William Lewry, both officials in the Town Surveyor's department, were the defendants. Mr. Warner Sleigh (instructed by Mr. Alderman Lamb, solicitor), acted for complainants, and Mr. Merrifield (instructed by the Town Clerk) did the same for defendants.

Mr. Sleigh, in stating the case, said that Messrs. Cramer had, at considerable cost, erected a telegraph wire over the houses connecting their two establishments, to which nobody objected, and it was a thing done in all the large towns of England and America, and without objection. However, the Brighton Corporation objected to this wire, and some time ago preferred an indictment against Messrs. Cramer, but never proceeded with it, and the telegraphic communication continued until last June or July, when in the middle of the night the connexion was severed, the fire escape (it was since ascertained) being used for the purpose. Some correspondence ensued between Messrs. Cramer and the Town Clerk, and the wire was re-connected, and remained in use until three o'clock in the morning of the 29th of September last, when it was again severed in two places, and the present defendants being proved to be the delinquents, this action arose, and as the Town Clerk had given him notice that the defendants would be represented by counsel he took it that the wrongful and wilful act was ordered by the Town Council or the Works Committee, especially as two members of the Corporation now on the Bench had intimated that they would take no part in this case.

Mr. Merrifield hereupon stated that although the defendants pleaded guilty, he did not admit that the wire was cut by the authority of the Council.

Mr. Sleigh could not accept this,—either the wire was cut by authority or on the defendants' own responsibility, and this latter was highly improbable.

Mr. Merrifield repeated his former pleading, and added that the defendants had acted on a wrong impression, and must take the consequences. The Corporation, if they wished to try the question by cutting the wire, would give notice of their intention.

Mr. Sleigh said his friend was blowing hot and cold in one breath; first, he said that defendants did an unwarrantable act; and, secondly, that if the Corporation chose to do a similar act they could on giving notice. It was saying, "Let us off easily this time, and we will do it again if we think fit." This would not do, and he demanded the authority for these men to go prowling about in the night doing wanton damage; and, instead of counsel pleading apologetically, this ought to be done.

There being no response to this, and Mr. Sleigh calling no witnesses, the Stipendiary and his colleagues were agreed that nothing could be worse than the way in which the transaction, to which the defendants pleaded guilty, had been effected. The law regarded it as especially bad in all such cases when committed between the hours of nine p.m. and six a.m. Neale would be fined 5*l.*, and 1*l.* 10*s.* as half the damage (estimated at 3*l.*), and Lewry the remaining 1*l.* 10*s.*, and a fine of 1*l.*

Before the parties left the Court, the Stipendiary remarked that the erection of telegraph wires across the streets might be a fit subject for the Social Science Congress to discuss.

New Font for Gloucester Cathedral.—A Gloucester paper states that the late Mr. W. Gibbs, of Tyntesfield, had expressed a desire to present a new font to Gloucester Cathedral, but was prevented from carrying out his wish. His son, knowing of this intention, has instructed Messrs. Farmer & Brindley to construct a font, "without limit as to cost."

THE STRAND AND COVENT GARDEN.

Sir,—My neighbours and myself ought to be very much obliged to the press for having, however tardily, taken up the subject of our local administration. Permit me to thank you for your article on the "Government of the Strand and its neighbourhood," and, in confirmation of that part of it relating to street-cleansing, to offer you the following notes carefully taken on the spot.

On Tuesday, the 28th of September last, scavengers began to sweep up Bedford-street at twelve noon. On Thursday, the 30th ult., scavengers carted away at one p.m. On Saturday, the 2nd of October, we were favoured with what is known as a pouring wet day, and at half-past eleven Bedford-street was not even swept up; only at ten minutes past twelve did the functionaries of the broom appear, when they collected the horse-dung, liquid matter, vegetable and other refuse, into heaps in the kennel, thereby damming at intervals the steady and necessary flow of the street drainage. These heaps, which were sliced and smashed every minute by the wheels of passing vehicles, were still visible in Bedford-street at two p.m.

On Thursday, the 5th inst., at eleven a.m., none of the streets immediately surrounding Covent-garden were even swept. Itinerant cabs and carriages rolled over a carpet of vegetable leaves. On Thursday, the 7th inst., at a quarter to one, a cart was being filled by dustmen in King-street. At the same time the usual heaps of broken vegetables, straw, dung, and other "matter in the wrong place" were carefully arranged along Garrick-street and New-street. On Saturday, the 9th inst., at a quarter to twelve noon, six scavengers began to sweep up in Bedford-street. The heaps of refuse were removed from the same street about half-past two; and at a quarter past five p.m. a dustman was engaged in Chandos-street with the cart in shovelling up a heap of vegetables which, like the last rose of summer, had been left dying alone.

It is useless to apply to Mr. Fry, the surveyor to the District Board. Two horses and two carts cannot do more work in one day than two horses and two carts are accustomed to do. Householders here are poisoned at three in the afternoon with the long stagnant contents of their dust-bins, which are often emptied at that hour. Mr. Colam has just offered a reward for the discovery of certain offenders who have poisoned some local cats. Can he do nothing to prevent the men and women who live in this neighbourhood from being poisoned? A society for the prevention of cruelty to ratepayers, and for the entire abolition of modern vestrymen, would be hailed with delight by every one who is unfortunately

A Resident in Covent Garden.

PROPOSED PLATFORM ON LONDON BRIDGE.

Sir,—As a matter of fairness, I trust you will reprint the following from the *Builder* of January 15th, 1870. T. I.

"*London Bridge Traffic.*—Provision for extra accommodation for the constantly increasing traffic on London Bridge, which is urgently needed, has been suggested to be supplied by various methods. Amongst them a plan is proposed by Mr. T. Ivison, who some time since submitted a design to the Corporation of London, for steel or iron bridges for the accommodation of foot-passengers at street crossings. His design for London Bridge is based upon the same idea, namely:—to carry the foot-passenger traffic over the carriage-road. This he proposes to do at London Bridge by a platform of 25 ft. wide extending along the centre of the bridge, with cross galleries at each end of the platform, which would serve for street crossings, and with cross galleries over each pair of piers, to give firmness to the structure. The gallery would be 18 ft. high, clear, and would be supported upon clusters of Corinthian columns. Two spaces of 25 ft. wide would be left on each side over each arch of the bridge, to allow cross carriage traffic if required. The piers and abutments would be carried up to the top of the structure in Portland stone, enriched with Caryatides.* The footways on the bridge would be thrown into the carriage road, and thus provide for six lines of vehicles, the number for which there is space upon the new Blackfriars and the Westminster Bridges. One objection to this plan is the asserted insufficiency of the foundations of the bridge to carry any greater weight than they already bear."

Sir,—Would not an additional bridge, simply for foot-passengers, parallel to the eastern side of London Bridge, be a good expedient? It would enable enough of the present footways to be added to the roadway to admit of one line of traffic extra, and it would afford as good a view of the bridge as any to be obtained from the river. There is great outcry against disfiguring the bridge, but very few who are on it comprehend its beauties.

A bridge for foot-passengers only could be cheaply approached, and might be very lightly constructed compared to what wheel traffic accommodation would necessitate.

Draymen walking beside their horses' heads require some footway, and the raised gangway scheme would be of no service to them. H. W.

ACTION AGAINST A MASON FOR DEFECTIVE WORK.

The plaintiff in this case is a shopkeeper of Martley named William Charles, and the defendant, Thomas Wintle, is a stone and marble mason of Worcester. Mr. Bentley was for the plaintiff, and Mr. Meredith for the defendant. The action was for the recovery of 9*l.* 8*s.*, amount paid to the defendant for a headstone, which it was alleged was now defective and faulty. In May, 1874, the plaintiff ordered the defendant to erect a marble headstone in Martley churchyard, and the defendant undertaking that it should be a good sound stone. On the Sunday succeeding its erection, the plaintiff discovered that the stone was cracked, and the fault had since become worse. On seeing the defendant as to this he promised to try and repair the error, but, if he found that impossible, to erect a new stone. Evidence in support of the plaintiff's testimony was given by a Mr. Saunders, of Martley, who had seen the stone lately, and described it as being a bad, unsound stone.

For the defendant, it was contended that there was no crack at all, but merely a water-mark, which was common in marble, which would get no worse, and would not disfigure the face of the stone.

The defendant's testimony on these points was confirmed by that of Mr. William Perks, marble mason, of the Tything, who had lately seen the stone, and who persisted in saying that there was no displacement of substance or any crack whatever, but merely a discolouration, which would not injuriously affect the stone.

His Honour gave judgment for the full amount claimed.

SCHOOL BOARD SCHOOLS.

Garth.—On the 6th ult. the second school erected by the Llangollen School Board was opened at Garth, near Llangollen. The architect was Mr. Owen, of Liverpool, the builders being Messrs. V. J. Roberts & Co., Llangollen. The plan is that of a Latin cross, the school-room forming the shaft, and the class-rooms each side forming the arms. The size of the school-room inside is 30 ft. by 18 ft., each class-room being 18 ft. by 13 ft., and there are small porches each side forming separate entrances for boys and girls. The building is intended for a mixed school, but there are separate playgrounds, closets, and class-rooms. The style adopted is simple domestic Gothic, and the total cost has been about 600*l.*

Newcastle-upon-Tyne.—The Snow-street Board Schools were opened on the 20th ult. for the reception of pupils. Mr. Johnstone was the architect, and Mr. Whichello, builder, Newcastle, was the contractor for the execution of the whole of the works. The accommodation for the mixed school comprises a boys' hall, lighted by windows along either side, and six class-rooms. The infants' school, besides a commodious hall, with three galleries, has two class-rooms. Each of the schools has a room set apart for ablutions, and there are spacious playgrounds provided, with suitable contrivances for the amusement of the children, and covered sheds for wet weather.

Fordoun.—At a special meeting of the Fordoun School Board, on the 17th ult., Mr. Johnston, architect, was instructed to prepare plans and specifications for a new school for sixty scholars at Landsend.

Stourbridge.—At a meeting of the Stourbridge School Board, on the 27th ult., designs for new schools, by Mr. Smallman Smith, architect, were adopted, and it was resolved to borrow 5,000*l.*, for defraying the expenditure.

Bungay.—Mr. John B. Pearce, of Norwich, has been appointed architect to the Bungay School Board. The number of children to be provided for is 700.

Montrose.—The Lochside School, just erected by the Montrose School Board, is a plain, one-story Gothic building, and contains a school-room, 47 ft. by 18 ft. 6 in., and a class-room, 16 ft. by 12 ft. There are separate play-grounds and offices. The contractors for the work were,—mason, Mr. Ford; joiner, Mr. David Milne; slater, Mr. Andrew Brown; plumber, Mr. Robert Fairweather; plasterer, Mr. David Hogg. The total cost, including fittings, has been about 600*l.*——The Townshend School, now in course of erection, has a frontage of 182 ft. There is a school-room, 51 ft. 6 in. by 20 ft., capable of accommodating 128 scholars. There are two class-rooms, one for boys and another for girls, each 20 ft. by 16 ft., and each accommodating forty pupils. The building is already well up, contracts having been entered into with the following tradesmen:—Mason, Mr. Ford; joiners, Messrs. Fettis & Stephen; slaters, Messrs. Stewart; plumber, Mr. Robert Fairweather; plasterer, Mr. William Grant. The total of the contracts is about 1,450*l.* Mr. Wadie (Brand & Wadie) is architect of both schools.

Liverpool.—At a meeting of the Liverpool School Board, held on the 27th ult., the Sites and Buildings Committee recommended that the tender of Messrs. R. Wells & Sons, amounting to 11,447*l.*, for the erection of Walton-lane school, be accepted, provided that Messrs. Wells & Sons consent to the brickwork being supplied by Messrs. Makinson & Glover, as sub-contractors. The last proviso in the recommendation gave rise to considerable discussion. Subsequently the Clerk stated that a letter had been received from Messrs. Wells withdrawing their tender unless they were allowed to increase it by 160*l.*, in consequence of the rise in the price of bricks. The tender, as amended, was then accepted by the Board.

Copdock and Washbrook (*Suffolk*).—New Board schools for the parishes of Copdock and Washbrook were opened on the 27th ult. at Copdock. Accommodation is provided for 130 children. The principal schoolroom is 46 ft. 6 in. by 18 ft., fitted with five groups of desks. The infants' schoolroom is 21 ft. 6 in. by 18 ft. Lavatories and conveniences are provided in the playground. A master's house is attached to the school, containing a parlour, kitchen, scullery, and out-offices, and three bedrooms. The buildings have been erected by Mr. George Edwards, of Washbrook, from the plans of Messrs. F. Barnes and E. F. Bishopp, architects, Ipswich, at a cost of 750*l.*

Wivelsfield.—Mr. R. Pannet, builder, of Hayward's-heath, has got the contract for building the Board schools at Wivelsfield, the site of which is just to the west of the present schools. The architect is Mr. Card, of Lewes.

Chickerell.—On the 4th inst. a new Board school was opened at Chickerell, Dorset. The building is Gothic in character. The walls are built hollow, of red brick, relieved with bands and patterns of dark grey burnt headers, and pointed with white mortar. The roofs and bell-turret are covered with red Bridgewater tiles. The school has been designed for 150 children, and comprises a large room to be used as a mixed school, 40 ft. long by 18 ft. wide; two class-rooms, 12 ft. 6 in. by 18 ft. and 18 ft. by 16 ft. The larger class-room is fitted with a gallery for younger children. The fittings of the mixed school are of pitch pine, and are made movable, with reversible desks. The separate entrances for boys and girls are fitted up with wash-basins and hat and cloak pegs. The master's house contains a hall, sitting-room, kitchen, scullery, pantry, store-closet, and three bedrooms. The building has been erected by Mr. Innes, of Weymouth, from the designs of Mr. C. Greaves, architect, of London. Mr. Taylor acted as clerk of works. The cost, exclusive of land, was 1,300*l.*

Felmingham.—The School Board for the Felmingham and Banningham united district has instructed Mr. John B. Pearce, of Norwich, to prepare plans and specifications for new schools and teacher's residence at Felmingham.

Chignal St. James. — The tender of Mr. H. Kennel, builder, Writtle, has been accepted by the Chignal St. James's School Board for the erection of a new school.

SCHOOL-BUILDING NEWS.

Wokingham.—On the 30th ult. the endowed elementary schools known as "The Palmer Schools," which have been in course of erection for the past twelve months, were opened by the Bishop of Oxford. The schools stand in an enclosed space about an acre and a quarter in extent, and they are constructed for 325 children. The building is of plain red brick, in the Tudor-Gothic style. The walls are 16 in. thick, and hollow. There are a mixed school and an infants' school. The mixed school-room is 54 ft. long by 20 ft. wide, with two class-rooms, one 20 ft. by 16 ft., and the other 14 ft. by 16 ft. There is a porch and clothes-room for both boys and girls, with a separate entrance to each, and the boys and girls will be separated in both rooms by curtains. The infants' school is a distinct department, having a room 40 ft. by 20 ft., at the end of which is a gallery with a movable platform. Seats are arranged for classes, and attached to the infants' room is a small room for very young children, which will be furnished with mattresses for the infants to sleep upon. A clothes-room is also attached to the infants' department. The buildings are ventilated on Tobin's principle. Messrs. Morris & Stallwood are the architects; the builder being Mr. Maynard, of Wokingham. The cost, including the site and teacher's residence, will be about 2,800*l.*

Lewisham.—A small building about 30 ft. by 20 ft. has just been erected by Messrs. Staines & Son, in Nightingale-grove, Hither-green, for mission and school purposes in connexion with the Lewisham Congregational Church.

Hermitage and Hilfield.—On the 27th ult. new school buildings for the use of these adjoining parishes were opened. The school, with teacher's residence, has been built of green stone (given by Lord Digby) and brick facings, from a design by Mr. Walter Fletcher, county surveyor, and carried out by Mr. E. W. Kingman, of Lydlinch. The cost has been 700*l.*

Hampstead.—On the 29th ult. the new Infants' Schoolroom, in connexion with the Baptist Chapel at Child's-hill, was opened. The style of the building is in harmony with the chapel which it adjoins, and was designed by the same architect, Mr. W. Allen Dixon, of Kentish Town. Messrs. Staines & Son were the builders.

* The cross galleries were supported on Caryatides placed at the inner angles of the piers, which were not otherwise interfered with.—T. I.

Wyke (*Yorkshire*).—The foundation-stone of new Church infant schools was laid on the 29th ult. The buildings will accommodate 160 infants, the estimated cost being about 750*l*. The Low Moor Company presented the site. The architect is Mr. W. H. Howorth, of Hipperholme.

Newnham (*Cambridgeshire*).—A large school building for the "higher education" of women has just been erected at Newnham, and will shortly be opened. The building, which is called "Newnham Hall," is in the "Queen Anne" style, and consists of a ground floor and three stories. On the ground floor there are a dining-room, lecture, reception, and principal's rooms, kitchen and other accommodation. There are fourteen rooms on the first floor, including a lecture-room, 17 ft. square, bath-room, &c. The other rooms, which measure about 14 ft. by 11 ft., will be used by students. There are the same number of rooms on the second floor as on the first, and on the third or attic floor there are eight rooms and a music room, the latter measuring 22 ft. by 17 ft. The material used is red brick, and the roof is covered with red tiles. The chimneys are lofty, with moulded cornices, and connected together by arches. There is an ornamental brick cornice surrounding the building level with the attic, and at the angles of the various gables rusticated quoins have been placed. The total cost will be about 6,000*l*. The architect is Mr. Basil Champneys, of London; and the builder is Mr. J. Bell, of Cambridge and Saffron Walden; the clerk of the works being Mr. W. Burgess.

Calveley.—New National Schools at Calveley, Cheshire, have just been completed, from plans by Mr. Bowers, architect, Nantwich. They are built of red brick with ornamental blue facings and stone dressings. They are divided into master's and mistress's apartments, and the school proper. The house upstairs contains three sleeping-rooms, and below are sitting-room, kitchen, scullery, pantry, &c., all well lighted. The large schoolroom, which measures 63 ft. long, 22 ft. wide, and has a height of nearly 26 ft., has an open high roof, supported by timber beams resting on stone buttresses springing from the walls. There are two large class-rooms, 26 ft. by 19 ft., adjoining. All the rooms have boarded floors. The contract was undertaken by Mr. Adams, of Calveley.

Bradford.—On the 29th ult. the Bradford Girls' Grammar School, at the bottom of Hallfield-road, was formally opened by Lady Frederick Cavendish. The building was formerly a private school, and was purchased for the sum of 5,000*l*. by the Bradford Ladies' Educational Association for a Girls' Grammar School, and altered for that purpose at a further cost of about 2,000*l*. The contractors for the several works required in carrying out the alterations were:—Masons', slaters', and plasterers' work, Messrs. Illingworth Bros.; plumbers', Mr. Rushworth, Shipley; decorators', Mr. E. Harland.

Lexden.—The foundation-stone of a new schoolhouse was laid at Lexden on the 29th ult. by Lady Greathed. Messrs. Pye & Haywood are the architects of the schools, which are to accommodate 150 children.

Bridport.—New National Schools are in course of erection in Gundry-lane, Bridport. They will accommodate 420 children. The architect is Mr. R. Cornick, of Allington, and the builder Mr. H. Jerrard, of Bridport. The cost will be about 2,000*l*.

Coventry.—New Roman Catholic Schools, in connexion with St. Osburg's Church, Hill-street, were opened on the 5th inst. The new schools are built of red brick, with blue brick bands and white stone dressings. There are two large schools, one for boys, 62½ ft. in length by 22 ft. in height and width; and one for girls and infants, 75 ft. in length, and of the same height and width as the boys' school. A private house for a master and mistress adjoins the schools. The architect is Mr. T. P. Donnelly, and the contractors Messrs. Hallam & Price, of the Palace-yard.

Brindley's Steam Slate Works. — A company has been formed to acquire and work the well-known slate and slate enamelling business of the late Mr. Joseph Brindley, of Bermondsey-wall, and for that purpose contracts have been entered into under which the whole of the business, including goodwill, machinery, plant, utensils, and stock, will become the property of the company. The transfer of the business and its formation into a joint-stock company has been made on account of the direction in the will of the late proprietor to sell.

STRIKE AND LOCK-OUT OF PLASTERERS AT DUNDEE.

A DISPUTE has arisen between the Dundee operative plasterers and their employers, regarding the employment of apprentices. In a letter to the *Dundee Courier*, Mr. Alfred Guthrie (president), and Mr. James Johnston (secretary), of the Master Plasterers' Association, state that some time ago, after four months' correspondence and personal negotiation, the men conceded to the masters the privilege of keeping a message-boy in addition to the number of apprentices allowed to each master by the rules of the Dundee Operative Plasterers' Society,—some masters being allowed three, and others two apprentices. At the time the men granted this concession (which was to come into immediate operation) to the employers, the latter agreed to certain arrangements as to the wages of the men, which were not, however, to have effect for a period of six months. When the employers acted upon the arrangements they had made with the men by taking on the message-boys, the men informed the employers that they had resolved that all the rules must come on together, and that unless the boys were put away an immediate strike would be the consequence. One employer, who had a lad fourteen years old working as a labourer in his yard, made arrangements with his men to retain the lad, agreeing that if the society objected he would at once put him away; but, instead of acting on this, the men struck work. The lad was immediately sent away, but instead of resuming work the men continued the strike on the plea, as stated in their secretary's letter, that two of the shops would be struck till the masters would make arrangements satisfactory to the men. This was followed by an intimation to both the employers, on the fourth day after the strike occurred, that no plasterer would be allowed to work for them unless they (the masters) paid all the expenses of the strike.

The other employers in the town, with one exception, have intimated that until the men return to their work in the two struck shops, the other shops in the town will be shut.

"ELIGIBLE SITES" FOR DWELLING-HOUSES AT STOKE NEWINGTON.

AT the meeting of the Hackney District Board of Works, on the 1st inst., Dr. Tripe, the Medical Officer of Health, reported that a number of houses in Defoe-road, Stoke Newington, were being erected on a large rubbish-shoot, and that the gases arising from such refuse would be injurious to health for at least two years. He suggested that counsel's opinion should be taken as to whether an injunction in Chancery could be obtained to restrain the builders from continuing the work without laying down a concrete foundation; whether an order for the removal of the refuse might be obtained under the Nuisances Removal Act; and whether the erection of buildings on such foundations could be prevented. He also recommended that a representation be made to the Metropolitan Board of Works of the necessity for an alteration in the Building Act, so as to give greater powers to local authorities in such cases. It was resolved that the clerk should take counsel's opinion on the subject. The *Hackney and Kingsland Gazette*, it appears, called attention to the subject three months ago, and now protests against the delay which will be caused in getting counsel's opinion, and then applying for an injunction in Chancery. It maintains that the District Board ought to be fully conversant with its powers, and should exercise them with promptitude and despatch. While the lawyers are "taking time to consider," this fever hotbed (which is stated by Dr. Tripe to be 5 ft. deep) may be covered with houses which, as soon as inhabited, will afford plenty of work for the doctor and undertaker. Those who are compelled to live in new houses would do well to act upon the advice given in the following advertisement in the *Hackney and Kingsland Gazette*, evidently inserted, *pro bono publico*, with especial reference to the houses now building in Defoe-road:—"Built to sell. To let, not to last. Inspect carcass buildings. Avoid bad foundations, dear ground-rents, and rotten-built erections."

Bristol Cathedral.—At an influential meeting held on the 12th inst., at Bristol, it was resolved to erect a tower at the west end of the cathedral as a memorial to Bishop Butler.

CHURCH BUILDING NEWS.

Ospringe.—The restoration of Ospringe Parish Church, Kent, is now completed. The works have comprised a new north porch, a new west window, and the decoration of the inner walls of the church. The total cost has been 442*l*. 1s. 11d., including 165*l*. for the stained-glass west window, by Clayton & Bell. The whole of the works have been carried out from the designs and under the direction of Mr. E. L. Blackburne, architect, London; the contractors for the north porch and the west window were Messrs. Whiting; and for the mural decoration, Mr. William Boorman.

Tunbridge Wells.—On the 4th inst. the Archbishop of Canterbury consecrated the new church of St. Peter, on the St. Mary's-hill Estate, Tunbridge Wells. The building is as yet unfinished, however, owing to lack of funds. It is a plain structure, and has been built by Messrs. Willicombe & Oakley, from plans prepared by Mr. E. E. Cronk, architect.

Hughenden.—The parish church of Hughenden, Bucks, dedicated to St. Michael and All Angels, was re-opened on Michaelmas Day, after restoration, enlargement, and partial rebuilding. The old nave and tower, to which no special architectural beauty or interest attached, have been removed, and the whole of the work westward of the chancel is entirely new, the chancel itself and a chapel on the north side of it remaining intact, beyond the restoration and rearrangement of the interior. The new building consists of a nave and north aisle, with a tower at the west end, the whole forming, with the old portion, a picturesque and harmonious group. The work is carried out, like the old building, in flint rubble, with stone quoins and dressings. There is a peal of six bells in the tower, two new ones having been added by Messrs. Mears & Stainbank since the rebuilding. The total cost is between 6,000*l*. and 7,000*l*. The whole of the works have been carried out by Messrs. Dove Brothers, of Islington, under the direction of the architect, Mr. A. W. Blomfield.

Skirbeck.—The Church of St. Nicholas, Skirbeck, Boston, was reopened on the 23rd ult., after restoration, under the direction of Sir G. G. Scott, by Mr. H. Clipsham, of Norwell, near Newark. The upper walls of the nave have been completely renewed externally, the north side restored to an upright position, and a pitch-pine roof placed upon them to the ancient pitch. The north aisle has been entirely rebuilt, and the south aisle refaced. The Early English buttresses have been restored according to discoveries made in the progress of the work. The original floor level has been adopted, the paving in the chancel being by Godwin, of Lugwardine. It is said that there have been found traces of a work of demolition, probably that in 1284, alluded to by Thompson in his history of Boston, when, by a flood in consequence of the breaking of the bank, all Boston was drowned, and many of the churches of North Holland damaged. The cost of the present works has been 3,000*l*.

Dartford.—The committee for the warming of Dartford Parish Church having received the following tenders, have accepted that of Messrs. Weekes & Co.:—Hot air,—Redfern, 60*l*., for apparatus only, to 55 degrees; water,—Telegraphic Engineering Works, Harrow-road, 231*l*. 5s. 6d. (small pipes, high pressure); Kiddle & Co., Sevenoaks, 270*l*.; Jones, Bankside, 270*l*.; Cannell, Woolwich, 253*l*. 5s.; Weekes & Co., Dartford, 230*l*.

Chatham.—The works in connexion with the restoration of St. Bartholomew's Chapel, Chatham, built by Bishop Gundulph, in the twelfth century, have been commenced, from the designs of Sir Gilbert Scott. The restoration works include the circular apse, chancel, and north transept, together with other portions of the edifice, should the funds at the disposal of the restoration committee prove sufficient. The contract has been taken by Mr. White, of London, who has been engaged in the restoration of Rochester Cathedral.

St. Giles's-in-the-Fields.—The Parish Church of St. Giles-in-the-Fields having been recently restored, under the direction of Mr. A. W. Blomfield, was reopened on the 10th inst.

Bourton-on-the-Water.—The parish church of Bourton-on-the-Water, of which the nave has been closed for the last three months, during the completion of the new aisle, is to be reopened on the 17th inst. The work of restoration has now been going on for three years. First, the chancel was restored, with new roof and oak fittings, a

new chancel arch built, and the nave reseated; and the church, thus far restored, was opened for service by the Bishop of Gloucester on December 23, 1873. During the past twelve months further works have been in progress. The north wall of the nave has been arcaded, and an aisle of the same size as the nave has been added northwards; and to the east end of the aisle has been added a vestry and organ-chamber. The architect is Mr. T. G. Jackson; the builder is Mr. Bartlett, of Witney.

DISSENTING CHURCH-BUILDING NEWS.

Monton.—A new Unitarian church, built at a cost of 13,679*l.*, in place of a smaller structure erected in 1802, was opened on the 23rd ult. at Monton, near Eccles. The church has been specially planned with a view to congregational requirements, all the sittings in the nave being placed within the line of the columns, so that the whole of the congregation can see the pulpit and reading-desk, clear of any obstruction from pillars, the aisles being formed into spacious, well-lighted ambulatories, 7 ft. in width, which can be made to accommodate a number of additional seats when necessary. There is accommodation for 510 sittings. The exterior of the church is faced with parpoints, with dressings of Darleydale stone, the interior arches and columns being of Hollington stone. There are a tower and spire at the south-west angle, rising to a height of 150 ft., and containing a lofty belfry stage, pierced by two large traceried windows of two lights on each face. Mr. T. Worthington, of Manchester, is the architect, and the contract was undertaken by Messrs. Clay & Son, of Audenshaw.

Stroud.—On the 23rd ult. Mr. Marling, M.P., laid the foundation-stone of a Wesleyan Chapel in Castle-street. The new site was purchased for 800*l.*, and the contract for the building amounts to about 2,700*l.* The style is Grecian, and the materials will be freestone and brick. Mr. Tait, of Leicester, is the architect, and Mr. Drew, of Chalford, the builder.

Hull.—On the 30th ult. the foundation-stone of the Hessle-road Congregational Church was laid by Mr. W. Irving, J.P. The building will be in the Geometrical style of Gothic architecture, and will accommodate about 850 persons. Galleries will be erected over the north end of the nave, and in the transepts. The plan of the building shows a nave of good width, and lofty proportions, whilst the east and west transepts are rather shallow, but of nearly equal width. Immediately adjoining the chapel is a school-room, opening from the main building, and close by are vestries, &c. Red stock bricks, with dressings of Ancaster stone, will be the materials used. The woodwork inside will be of fir, lightly stained and varnished. The architect is Mr. Samuel Musgrave, of Hull; and the builder, Mr. John Barry, of Scarborough, to whom the contract has been let for 5,400*l.*

Birmingham.—The Church of the Messiah, Broad-street, Birmingham, was reopened on the 3rd inst., after alterations and redecoration by Mr. Taylor, of the firm of Taylor & Parker. The architect was Mr. Phipson.

Malvern.—On the 29th ult. the memorial-stone of a new Congregational Church at Great Malvern was laid by Mr. T. R. Hill, M.P. The new church, which is estimated to cost 4,500*l.*, will occupy a site at the foot of North-hill, on the Holly Mount estate, and is designed in the Middle Pointed style, the walls being built of Cradley stone lined with brick. A tower and spire will be built at the north-east angle, to a height of 140 ft. The church will consist on plan of a nave and side-aisles, with 400 sittings on the ground floor, provision being made for a gallery at the north end if required in the future. Its dimensions are, internally, 70 ft. by 42 ft., and the architect, taking advantage of the levels, has provided for a series of class-rooms below. Mr. J. Tait, of Leicester, is the architect, and Mr. Meredith, of Gloucester, is the builder.

Weymouth.—Memorial stones of a new Primitive Methodist Chapel were laid at Weymouth on the 29th ult. The style of the building is Gothic, and the materials to be used are brick, with stone dressings. The cost will be 650*l.* Mr. L. Bartlett, of Weymouth, is the contractor; and Mr. Samuel Jackson, of Weymouth, the architect.

Crowborough.—The foundation-stone of a new Primitive Methodist Chapel was laid at Crowborough, Kent, on the 6th inst. The chapel, which will be erected from plans prepared by Messrs. Weeks & Hughes, architects, of Tunbridge Wells, will be of red brick with stone facings, and will seat 200 persons. The cost, including site, will be 500*l.*

Mold.—The Welsh Calvinistic Chapel, Mold, was reopened on the 3rd inst., after alterations and redecoration. The chief alteration has been the pewing off and raising in tiers of the gallery. The architect has been Mr. Owens, of Breck-road, Liverpool, and the contractor, Mr. E. Peters, of Leeswood, the cost being about 600*l.*

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Birmingham.—A new Roman Catholic Church, dedicated to St. Catherine of Sienna, was opened at Birmingham on the 28th ult. The site is in the Horse Fair, and the style is that of the transition from Norman to Early English. The principal material used is brick, with stone dressings. The main or west front is 80 ft. high, and is relieved with intersecting round-arched colonnades in Bath stone, the shafts being of Kilkenny marble. Above this is a large five-light window, and below are the principal entrance doorways. Internally the walls are faced with white bricks, relieved with bands of red. In plan the church will ultimately comprise nave, aisles, and chancel, but at present only the nave and aisles are completed. The nave is 105 ft. long, divided into nine bays by eight columns of red Mansfield stone, with bases of grey Pennant, and capitals of white Mansfield. The arches are circular-headed, and relieved with nail-headed mouldings. The clear-story windows will be twenty in number, and very lofty. The breadth of the church, including nave and aisles, is 57 ft. The chancel arch, which is at present bricked up, is 50 ft. high. The roof principals spring from corbelled shafts of polished Kilkenny marble. At the west end is a small organ-gallery over the porch. The cost, including site, is about 10,000*l.*, but in order to build the chancel and erect the tower and spire, which is to be 175 ft. high, about 5,000*l.* more will be required. The architects are Messrs. Dunn & Hansom, of Newcastle.

Guildford.—The memorial stone of a new Roman Catholic Church was laid on the 21st ult. in the grounds of Sutton-place, near Guildford, the seat of Mr. F. H. Salvin, by Dr. Danell, bishop of Southwark. St. Edward's Church, as it is to be called, will be built in the Early English style, and constructed of brick faced with flint. The site is a commanding one, and close to the ancient mansion of Sutton-place, built by Sir R. Weston, knight, in the time of Henry VIII.

York.—The new Convent and Church of St. Joseph, just outside Walmgate-bar, York, were dedicated on the 29th ult. Mr. G. Goldie, of London, is the architect.

West Bromwich.—On the 5th inst. the Rev. Dr. Ullathorne, of Birmingham, laid the foundation-stone of a new Roman Catholic Church at West Bromwich, dedicated to St. Michael and All Saints. The new church will be in the Early English style, and will, when completed, cost about 4,500*l.* When finished it will have a frontage to the High-street, with a tower at one corner. At present it is not intended to complete the edifice according to the plans. What will be done will be the erection of a nave 65 ft. by 20 ft. wide, and a chancel 21 ft. by 20 ft. There will also be a north aisle, 11 ft. by 9 ft., and one side chapel at the east end of the aisle. Until the base of the tower is finished it will only be aisle high. Afterwards, and when the whole of the alterations are made, there will be a south aisle with a chapel at the end of it, with a space for a sacristy, and, if required, an organ-chamber. The nave piers will be of Bath-stone, having brick arches above them, and will be lighted by six lancet windows. Externally red pressed bricks with Bath-stone dressings will be used, and internally the edifice will be lined with white bricks and ornamental bands of terra cotta. The building, so far as it will be immediately completed, will cost 2,500*l.*, and will seat 400 people. Messrs. Dunn & Hansom, Newcastle-on-Tyne, are the architects, and Messrs. Barnsley & Son, Birmingham, the builders.

Monkwearmouth.—The prizes and certificates granted by the Science and Art Department to the students of the science classes, at the Workmen's Hall, Monkwearmouth, who passed the last examination, were presented by the Mayor of Sunderland, at that institution, on the 12th of October.

STAINED GLASS.

Shippon (Oxon).—A memorial window has been executed by Messrs. Holland & Holt, of Warwick, for Shippon Church, containing two subjects under canopies,—Christ bearing His Cross, and the Ascension; in the tracery an angel bearing a scroll and ornament. A brass plate is fixed under the window explaining that the whole was erected by the committee, in memory of the Rev. James Hodges, for eight years vicar of the parish, and Caroline Mary, his wife.

Epsom.—A window has been recently placed in the chapel of the Royal Medical Benevolent College, Epsom, to the memory of Bishop Wilberforce, who held a confirmation there only two days before his sad death, and which, it is believed, was the last public duty performed by him. The window will be in the style of art prevalent in the latter part of the fifteenth century. The subjects are placed beneath canopies, and are "Confirmation," and "Our Lord blessing little Children." The head of the Bishop in the confirmation subject has been taken from a likeness of Bishop Wilberforce. In the tracery-pieces at the upper part of the window are figures of St. Peter and St. Paul, and at the extreme base is a short memorial inscription. The window was designed and completed by Mr. Francis A. Oldaker, of Epsom.

Miscellanea.

The Thames Steam Ferry.—The Thames Steam Ferry Company (Limited) is instituted to supply in part the much-felt want of a below-bridge communication between the Middlesex and Surrey sides of the River Thames, by means of a steam ferry for the transmission of loaded wagons of any size or weight, carts and carriages, with their horses, as well as of passengers and goods. The site which has been selected for the ferry is one mile and a half below London Bridge. It is close to the Thames Tunnel, and is in immediate proximity to the London Docks and St. Katherine's Docks on the one side, and to the Commercial Docks on the other. The outlay which will be required is estimated at 56,360*l.*, and it is estimated that the annual earnings will be 30,000*l.*, as against 11,300*l.* expenses, leaving a net profit of 18,700*l.* The first portion of the works, consisting of river walls, and engine and accumulator houses, is now in hand. Messrs. A. R. Stenning and J. B. Tyerman are the architects; and Messrs. Lee & Son, of Westminster, are the contractors. On Monday last a large number of gentlemen assembled to witness the ceremony, performed by the Lord Mayor, of driving a main pile of the company's pier at Wapping.

Druidical Stones at Holywood.—A correspondent of the *Dumfries and Galloway Courier* gives some particulars of the Druidical circle of stones at Holywood, near Dumfries. He says that the cromlech and the tall stone opposite to it are in precisely the same relative position with regard to each other as are the altar stone and the stone of astronomical observation at Stonehenge; that is to say, when standing on the altar stone at Stonehenge, and looking over the top of the stone in the avenue called the "Friar's Heel," you will find that this friar's heel is a little to the north of the east, and that is exactly the position which the tall stone facing the cromlech at Holywood bears to the cromlech. At the summer solstice, the Arch-Druid or any one else standing on the altar stone at Stonehenge and looking over the top of the stone in the avenue would see the sun rise exactly over the top of that stone on the morn of the summer solstice, and any one who likes to stand at the cromlech at Holywood, at sunrise on the 21st or 22nd June of any year, can see the same thing, for the sun does not rise exactly in the east at the summer solstice, but a little to the north of the east.

The Kensington and St. Luke's Surveyorships.—At a meeting of the Kensington Vestry on the 5th inst., the Works and General Purposes Committee *inter alia* reported that they had turned their attention to the retirement of Mr. James Broadbridge, consequent upon ill-health, from the position of surveyor to the Vestry, and they recommended that a superannuation of 250*l.* per annum be granted to him. The recommendation was agreed to. At the last meeting of the St. Luke's Vestry, the death of Mr. Niblett, the surveyor of the parish, was announced.

Water in England.—At the Bristol meeting of the British Association for the Advancement of Science Mr. De Rance read an abstract of the preliminary report of the committee appointed last year "for the purpose of investigating the underground waters in the new red sandstone and permian formations of England, and the quality and character of the water supplied to various towns and districts from these formations." The committee have circulated a form of inquiry to elicit the information necessary to carry out the investigation with which the Association has entrusted them, and valuable returns have already been made. But it seems that through the action of certain corporations and companies seeking additional Parliamentary powers, and from other causes, information has been withheld from the committee; and that firms and individuals in some towns have also refused to communicate the results of wells and well-borings made by them. The report mainly consists of long lists of strata passed through in the sinking of various wells, and analyses of the waters obtained.

The Artisans' Dwellings Act.—We learn that Dr. Tidy, the medical officer of health for Islington, has submitted to the Sanitary Committee of the Vestry a list of places in the parish to which the Act should be applied. We can bear witness to the necessity.——The Committee of Works of the Chelsea Vestry are deliberating, and in conjunction with the medical officer of health, will immediately report to the Vestry, in accordance with the following resolution just passed by that body:—"That the medical officer of health of the parish of Chelsea do furnish the Vestry with a list of houses in the parish over which he has sanitary *surveillance* which are, in his opinion, by reason of want of light, air, ventilation, sanitary convenience, and other causes, unfit for human habitation, and require rearrangement and reconstruction according to the terms of the Artisans' Dwellings Act; and that the surveyor do furnish the medical officer with all particulars."

The Birmingham Improvement Scheme. The Birmingham Town Council held a special meeting on the 12th inst. to consider the new improvement scheme. It is proposed to construct a new street over a length of forty-three acres and a half of land, demolishing a great number of rookeries. The total cost is estimated at over 1,000,000*l.*, but by reselling land the net cost of the street will be reduced to 461,000*l.* The Mayor stated that 9,000 people would probably be displaced by its operation, and in the opinion of several architects he had consulted, by an improved construction they would be able to build abodes for 18,000. A long debate followed, but no opposition was offered, and on the resolution being put it met with unanimous approval. A resolution was passed authorising the Improvement Committee to take such formal and legal measures as are necessary for the completion of the scheme.

"Improving Away." — "Conservator" writes to the *Times*:—"For nearly 600 years the full-sized effigy of Sir Robert de Septvans, a crusader—one of the most famous brasses in England—had remained undisturbed in the chancel of Chartham Church, Kent. Hard by were the effigies of two priests, who were rectors of the parish, and died in 1454 and 1508. Can it be believed that on the authority of the rector, these interesting monuments have been removed to make way for a modern encaustic tile pavement? I appeal, Sir, to you, in the hope that at last some practical steps may be taken to protect monuments of historical interest from Vandalism, which is none the less destructive because it may have been done with the plausible motive of 'improving' a church."

Drinking Fountain for Kidderminster.—Mr. Brinton, J.P., intends presenting a drinking-fountain to Kidderminster, and has instructed Mr. Meredith, a local architect, to prepare a design, which was on the 30th ult. submitted to the Improvement Committee of the Town Council. The fountain will be a satisfactory substitute for the old Kidderminster toll-gate, upon the site of which it will be erected. The structure will be Gothic in style, octagonal on plan, 12 ft. 6 in. across, and will stand on a pedestal 22 ft. across. Its total height is 32 ft., the materials used being granite and Forest of Dean and York stone. It will contain a clock with illuminated dial, and on each of three faces drinking-fountains, together with one for dogs. It will be inclosed by railings, and in front and around evergreen shrubs will be planted.

Curious Discovery.—The *Cronstadt Messenger* announces that, during the reconnaissance recently effected in the Steppes by the Russian troops of the Transcaspian section, they discovered the ruins of an ancient city, the existence of which was hitherto unknown. From what is reported, the remains prove that the place possessed a large sedentary population. Several minarets of Arabic architecture were found in a very good state of preservation, owing to their remarkably solid construction. The inscriptions which were found on many of these ruins were copied by the officers of the expeditionary column, and have been submitted to the examination of competent Orientalists. The site of the unknown city bears the traces of a vast system of irrigation, and a plentiful supply of drinkable water is still found there.

Work and Wages.—It is announced that at the solicitation of the Cobden Club, Professor Leone Levi has consented to deliver during the winter a series of lectures on work and wages to the members of the working men's clubs of the metropolis. It is probable that the lectures will be delivered in the theatre of King's College, the use of which has been granted by the council of the institution. After each discourse opportunity will be given for asking questions and discussing the views advanced by the lecturer; and at the close of the series an examination will be held and prizes will be given by the Workmen's Club Union to those who give the best answers to the questions which will be asked in reference to the matters dealt with by the lecturer.

Palestine Exploration.—A correspondent from the East writes:—"The American Palestine exploring party left for the east of the Jordan on Thursday, September 1st. It consists of Colonel Lane, chief engineer and commander of the party; Dr. Selah Merrill, archæologist; Mr. Rudolph Meyer, assistant-engineer; and Mr. J. Harvey Treat, general assistant. They will make a preliminary reconnaissance of forty-five days in the Hauran, Bashan, and Moab, and then begin their cartographical work. The maps to be constructed by the American expedition east of the Jordan, and by the English expedition west of the Jordan, will be of immense value, and the Porte might well afford to assist in bearing the expense."

Ecclesiastical Exhibition.—As usual for many years past, an ecclesiastical exhibition accompanied the Church Congress, but (according to the *Staffordshire Advertiser*) the exhibition held last week at Stoke failed to keep pace with the use of ecclesiastical adornment, structural and otherwise. The display of material ornamentation in matters that have moved, and are still moving, the Church, was confined to a competitive exhibition between Messrs. Jones & Willis and Messrs. Cox & Sons. Both firms exhibited a quantity of brass work; the former added a carved oak lectern, and other carved oak work; and the latter exhibited in a piece of tapestry, a modern adaptation of the weaving and printing machines to meet the taste for mediæval religious industries. The Campbell Brick and Tile Company were exhibitors.

The Regent Murray Memorial, Linlithgow. — Three centuries have elapsed since James Stuart, Earl of Moray, was assassinated. The people of Linlithgow have erected a commemorative bronze medallion or mural tablet, which has been unveiled by the Earl of Rosebery. The medallion was drawn by Sir Noel Paton, and modelled by Mrs. D. O. Hill; and the bronze of which it is composed was manufactured by Messrs. Milne & Son, Canongate, Edinburgh. The figure of the Regent, it is stated, was taken from a painting in Holyrood Palace. The tablet bears the following inscription:—"On the street opposite this tablet Iames Stvart, Earl of Mvrray, Regent of Scotland, was shot by Iames Hamilton of Bothwellhaugh, on 20 Ianvary, 1570. Erected in 1875."

Goole Market Hall.—The Goole Market Hall Company has accepted the tender of Messrs. Radcliffe & Radcliffe, of Rotherham and Doncaster, for the execution of the works in connexion with the new Market Hall. The contract is to be completed by December 31st, and includes besides the re-erection of the old Doncaster Corn Exchange, the construction of a row of offices and shops.

South Milford School Board.—The Board have selected Mr. Bakewell's (of Leeds) design bearing the motto "Apollo," and have appointed him architect to the Board. Six architects were invited to compete.

Treasure Trove.—The leases of the greater part of the property on the east side of High-street, Shoreditch, having recently lapsed, nearly the whole of the shops between Bethnal-green-road and the parish church are about to be pulled down and rebuilt. On the 9th inst., while the workmen were engaged in excavating the foundations of the shop known as the "Bonnet Box," an immense chest, 6 ft. long, 3½ ft. wide, and 3 ft. deep, was discovered, we are told, buried at a considerable depth from the surface. On being opened, it was found to contain a large quantity of church plate, consisting, among other things, of a ciborium, two silver pyxes, an ancient chalice, an elaborately-chased sanctuary lamp of great size, and a number of other articles.

Sewage Works at Kingston.—The Hampton Wick Local Board, at their last meeting, after hearing the opinion of the medical officer of health that the contemplated erection of sewage-works by the Native Guano Company to Kingston would be prejudicial to health, resolved to give notice to the town council of the latter place that they would instruct their solicitor to file a bill in Chancery against the corporation of Kingston, to restrain the erection of the works, when they received an intimation in the course of the week that the intention to erect the works would be abandoned

Artisans' Institute, Castle-street, Upper St. Martin's-lane.—The following lectures will be delivered in October (free to members):—October 16th, "St. Eligius, the Patron Saint of Goldsmiths and Jewellers, a Mediæval Hero," by the Rev. P. H. Wicksteed, M.A.; October 23rd, "Our Indian Empire, with Recollections of the Indian Mutiny," by Mr. James Neat (late corporal in the 80th regiment); October 30th, "On Railways, their Construction and Working," illustrated by models and diagrams, by Mr. W. Smith, C.E.

New Rectory House at Wimblington.—Some active preparations are in progress for building the new rectory-house for this parish, the plans showing a building of the domestic Gothic style of architecture similar to the rectory-house of St. Mary, March. The site chosen by the rector, the Rev. J. Hill, is what is known as Reed's Closes, adjoining the turnpike-road, not far from the toll-house, and on the same side of the road. The site is such an admirable one that we are not surprised at its being selected. Mr. W. Smith, Adelphi, London, is the architect; and Mr. W. Hutchinson, of March, the builder.

Slate Laps. — At the Salford Police-court lately, Thomas Valentine, builder, Broughton-road, Pendleton, was convicted, at the instance of the Town Clerk (Mr. C. Moorhouse), of having covered a number of new houses in Bury-street, Pendleton, with slates having laps only 2½ in. wide instead of 3 in., as required by the regulations of the Corporation. The Town Clerk said builders were getting very loose in their dealings with the authorities, and therefore he must press for the imposition of a heavy penalty. The Bench ordered Mr. Valentine to pay 10*l.* and costs.

The Ramsgate Surveyorship. — At the meeting of the Ramsgate Local Board, on the 5th inst., the resignation of the surveyor (Mr. Ellice-Clark) was received, and it was unanimously resolved that the clerk be instructed to write to Mr. Ellice-Clark, and thank him for his very efficient services, and congratulate him upon his promotion to an appointment of a more lucrative character. Mr. Ellice-Clark, as stated in last week's *Builder*, has been elected to the Derby surveyorship.

Dancing for Workmen.—In continuation of the paragraph, under the above heading, that appeared in last week's *Builder*, the application, on behalf of the Grosvenor Workmen's Club, for a licence for music and dancing was brought before the bench at the Middlesex Sessions, when counsel for the Vestry urged that dancing was quite foreign to the interests of working men. The music and dancing licence was refused by a very large majority of the justices, but a licence for music only was granted unanimously.

Chatham Dockyard.—The vacant appointment of principal draughtsman in the constructing department at Chatham dockyard has been conferred by the Admiralty on Mr. A. H. Malpas, first-class draughtsman at Portsmouth, and acting foreman at that yard. Mr. Malpas will, for the present, continue his duties at Portsmouth, Mr. R. Palmer having been appointed acting first-class draughtsman at Chatham.

The Park-lane Drinking-Fountain.—Attention is called to the fact that although it is now some months since Mr. Thorneycroft completed, by the orders of the late Miss Browne, the drinking-fountain which stands near the bottom of Park-lane, it is as yet a mistake to call the structure a drinking-fountain, for though it is plainly erected as such, not a drop of water comes from it. The present surroundings of the fountain, too, are, to say the least, not very creditable.

Epping Forest.—At a meeting of the Court of Common Council on the 7th inst., it was reported that 2,000 acres of land, which had been enclosed, would now be thrown back into Epping Forest, making its whole extent 5,000 acres. The occupants of about 1,400 acres, on which large mansions had been built, would not be called upon to clear away their buildings, as they had paid full value for the land, but they would have to pay quit rents, which would be spent in keeping up the forest.

Sowerby Town House.—The erection of this building is to be proceeded with at once. The contractors are Messrs. Siddal & Siddal, masons; Messrs. Schofield & Boocock, carpenters; Mr. Joseph Barker, plumber; and Mr. George Hoyle, slater, &c. The total cost will be under 1,000*l.* The site, containing about 360 square yards, has been given by Mr. John Rawson, of Brockwell. When completed, the building will supply a great need to the town of Sowerby.

South Kensington National Training School of Art.—The first of the seventh course of forty lectures on the Historical Development of Ornamental Art, with special reference to architecture, sculpture, painting, and the general principles of æsthetics, was delivered by Dr. Zerffi, in the Lecture Theatre, on Tuesday last. These lectures were formerly delivered at three o'clock in the afternoon, but will in future be delivered every Tuesday evening at half-past seven.

Artificial Stone.—Mr. Firling, painter, &c., of Dorchester, is stated to have invented a process by which he converts chalk into a substance exactly resembling stone, not only in appearance but in consistency, hardness, and durability, as well as resistance to the action of weather. It is claimed that it possesses the merit of economy, as the proportions are six of chalk to one of cement. The new material can be moulded to any desired form.

The Engineer to the Tunbridge Wells Town Commissioners.—At a meeting of the Tunbridge Wells Town Commissioners, on the 6th inst., the salary of Mr. Brentnall, the engineer, was increased from 300*l.* to 400*l.* An amendment proposing to fix the salary at 350*l.* was rejected by 16 to 5.

Opinions differ.—Some letters have appeared in the daily papers as to the pulling down of "a grand old mansion" in Leadenhall-street. A correspondent writes to us that he went to see it and found nothing, from an art point of view, to pay him for the trouble. The house is of the time of Queen Anne.

New Temperance Hall at Banbury.—On the 5th inst. the foundation-stone of a new Temperance Hall, in Bridge-street, Banbury, was laid. The building will cost about 3,500*l.* Mr. Ingall, of Birmingham, is the architect; and Messrs. J. & T. Davis, of Banbury, are the builders.

The Improved Industrial Dwellings Company.—With a view to much extended operations, the directors have decided to recommend that additional capital to the amount of 250,000*l.* be raised by the issue of 25,000 shares of 10*l.* each.

The Exeter Reredos.—The *Western Times* states that the reredos in Exeter Cathedral, about which there has been so much litigation, is being taken down. It is not known, however, whether it is to be removed from the cathedral altogether.

Sutton School Board, Surrey.—Mr. C. Woods, of Brixton, has been appointed as clerk of the works to the Sutton (Surrey) Board School buildings by the School Board of that town. Mr. Richard Gane is the architect.

Durham City Improvements.—The corporation of this city, on Wednesday, the 6th inst., unanimously elected Mr. William Crozier, C.E., county engineer and architect for the county of Durham, engineer for the improvements.

Photographic Society of London.—The annual exhibition of photographs is now open in the Gallery of the Water Colour Society, Pall-mall East, and well deserves a visit. The chief advance made is in the enlargement of smaller works.

Church Building in the Diocese of Lincoln.—At the Lincoln Diocesan Conference, held last week, the Bishop (Dr. Wordsworth) stated that since 1840 nearly a million sterling had been spent in building and restoring churches in the diocese.

The Rugby Brickmakers' Strike.—The brickmakers of Rugby, who have been on strike for an advance of wages, have resumed work, the masters giving the men what they asked for, viz., 7d. per hour. It was previously 6½d. per hour.

Architectural Association.—The first incident in the Architectural Session is usually the *conversazione* of the Architectural Association. It will be held on the present occasion on Friday evening, the 29th inst.

TENDERS

For sewerage works, Hertford-heath, Herts, for the Hertford Rural Sanitary Authority. Messrs. Smith & Austin, engineers. Quantities supplied:—

Clark & Randall	£958 14 0
Acock	757 12 10
Taylor	716 0 0
Pound	614 15 0
Dover, Son, & Co.	549 0 0
Potter	548 0 0
Williams	525 0 0
Bloomfield	514 0 0
Green	500 0 0
Gray (accepted)	486 0 0

For sewers, Field-road and adjoining streets, Fulham, for the Fulham District Board of Works. Mr. Alfred C. Bean, engineer. Quantities by Mr. Alfred J. Bean:—

Dover & Co.	£2,516 0 0
Pizzey	2,250 0 0
Wigmore	2,210 0 0
Howell	2,050 0 0
Keeble	2,022 0 0
Torkington	2,017 0 0
Thompson & Son	1,900 0 0
J. & S. Williams	1,880 0 0
Nowell & Robson (accepted)	1,795 0 0
Kelly	1,770 0 0

Accepted for St. Catherine's Church, Sandal Magna, near Wakefield. Mr. William Watson, architect:—

Fawcett (stonework)	£1,800 0 0
Craven & Lloyd (carpenter, &c., work)	595 0 0

Accepted for Goole Cemetery Chapels, &c. Mr. William Watson, architect:—

Senior (drainage, roads, &c.)	£993 0 0
Elliott (excavating, stone, and plastering)	1,636 7 0
Rawlins (slating)	111 0 0
Huntington (carpenter and joiner's work)	3[illegible]8 10 9
Shirtcliffe (plumbing and glazing)	93 11 4
Heaps & Robinson (ironwork)	217 0 0
Butler (painting and staining)	41 15 0

Accepted for Fever Hospital, Wakefield. Mr. William Watson, architect:—

J. & G. Summers (excavating, brick, and stonework)	£2,050 0 0
Rycroft (slating)	2 1 0 0
Daniel (plastering)	81 14 8
Craven & Loyd (carpenter, &c., work)	638 10 0
Jones (plumbing and glazing)	291 0 0
Heaps & Robinson (ironwork)	286 14 2
Naylor (painting)	39 0 0

Accepted for schools for 225 children, teacher's residence, outbuildings, and boundaries at Carlton, for the Lofthouse and Carlton School Board. Mr. William Watson, architect:—

Chapman & Sons (excavating, brick, and mason's work)	£1,798 17 8
Rawlins (slating)	120 0 0
Walsh (plastering)	52 18 4
Gill & Son (carpenter & joiner's work)	397 0 0
Brooke (plumbing, glazing, ironwork, and gasfitting)	267 0 0
Barker (painting and staining)	32 17 3

Accepted for schools for 225 children, teacher's residence, outoffices, and boundaries at Robin Hood, for the Lofthouse and Carlton School Board. Mr. William Watson, architect:—

Verity (excavating, brick, & stonework)	£1,835 8 0
Pycock & Sons (slating)	128 10 0
Walsh (plastering)	56 12 7
Colam (carpenter and joiner's work)	419 0 0
Brooke (plumbing, glazing, ironwork, and gasfitting	291 0 0
Barker (painting and staining)	32 16 8

For the erection of new warehouses in Addle-street, City, for the Worshipful Company of Brewers. Mr. E. H. Martineau, architect:—

	Warehouses.	Repairs.
Ashby & Horner	£6,920 0	£170 0
Longmire & Burge	6,811 0	160 0
Holland & Hannen	6,308 0	152 0
Cubitt & Co.	6,344 0	170 0
Brass	6,199 0	175 0
Lawrance	6,189 0	145 0

For erection of a new Wesleyan Chapel at New Basford, Notts. Mr. Wm. Ranger, architect:—

Bell & Son	£3,779 0 0
Hodson & Facon	3,709 0 0
S. & J. Cargill (accepted)	3,594 0 0

For erection of the Temple Works in Cursitor-street, Chancery-lane, for Mr. Bell. Mr. H. S. Legg, architect. Quantities supplied by Mr. Griffiths:—

Bamford	£7,750 0 0
Ebbs	7,100 0 0
Wagstaff	6,545 0 0
Downs & Co.	6,470 0 0
Elkington	6,440 0 0
Chapman	6,310 0 0
Scrivener & White	6,294 0 0

For additions and alterations to No. 17, Marylebone-road, for Mr. B. Shaw. Mr. C. N. Beazley, architect. Quantities by Mr. F. T. Mullett:—

		Deduct for old Materials.
Vernall & Griffiths	£1,489 0	
Longmire & Burge	1,436 0	
Foxley	1,374 0	£6 0
Kelly, Bros.	1,359 0	22 0
Adamsons	1,353 0	15 0
Bayes & Ramage	1,321 0	20 0
Staines & Son (accepted)	1,273 0	25 0

For the Stirling Castle, Camberwell, for Mr. John Wright. Messrs. Nunn & Green, architects:—

Grimwood & Sons	£2,848 0 0
Pigerstill	2,750 0 0
Coles	2,694 0 0
Lamble	2,620 0 0
Toms	2,570 0 0

For new buildings at the Hants County Lunatic Asylum at Fareham. Mr. T. Stopher, architect:—

Dover & Co.	£32,661 0 0
Martin & Wells	30,353 0 0
Hill, Higgs, & Hill	28,660 0 0
Longley	28,437 0 0
Ward	28,200 0 0
Light	28,100 0 0
Stevens	27,446 0 0
Hayter	26,700 0 0
Crook	26,495 0 0
Cole (accepted)	24,199 0 0
Oxley	23,580 0 0

TO CORRESPONDENTS.

G. W.—H. M.—F. C.—J. L.—J. B.—H. St. J.—E. W.—W. N.—H.—W. & A.—O. S.—W. P.—W. H.—E. T.—Dr. Z.—T. B. S.—H. C.—B. M. C.—H. J. M.—W. B.—R. M. B.—W. D.—W. C. M.—Mr. D.—T. B. W.—A. M. H.—T. L.—A. F. M.—H. & H.—J. L.—R. L. B.—M. & Co.—A. J. B.—W. C.—S. & A.—T. S.—M. & Sons.—J. E.—J. W.—E. P.—J. M.—W. W. (we cannot insert lists of tenders received some "months" ago).—W. J. B. (postponed, to make additions).—E. E. (should get the advice of some competent person in whom we can depend. As a rule we have not much confidence in the announcement of a "new motive power").—W. C. (pamphlet named has not reached us).—A Z. (a roadway 20 ft. wide would not be allowed in London. Take proper advice on the spot).—Signet (next week).—H. F. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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The Bank transacts every description of sound financial business. Book-keeping in the hands of the Subscribers, and a quarterly balance-sheet issued by Auditors appointed by them, independent of the management.—For particulars, apply to

R. B. OAKLEY, Manager.

NOTICE of REMOVAL.—Mr. J. T. ROBINSON, Architect and Surveyor, late of Laurel Bank, Steeles-road, Haverstock hill, London, N.W. begs to inform his clients and others that he has now REMOVED his Offices and Residence from the above address to 20, BLOOMSBURY-SQUARE, London, W.C.

THE SOCIETY of GERMAN and FRENCH DECORATORS.—The above Society beg to inform Builders and Decorators that they are able to send COMPETENT ARTISTS in all the Branches of the Business to any part of the Town or country.

For terms, apply to

Mr. C. SABOW, No. 9, Russell-terrace, Werrington-street, Oakley-square, London, N.W.

WOOD PAVING.—To LOCAL BOARDS, VESTRIES, CORPORATIONS, and OTHERS.—For particulars as to WOOD PAVING, laid complete by the Cheapest and Best Method, apply to JOSEPH S. GABRIEL, Grellier's Wharf, Belvedere-road, Lambeth, where Estimates for same may be had on application.

[**CONTRACTS**—*continued from* p. ii.

TENDER for HOT-WATER APPARATUS.—The (Twickenham Schools Committee are desirous of obtaining (without delay) PLANS, DESIGNS, and ESTIMATES of COST of WARMING the Parish Schools, Arragon-road.—For further particulars apply to Mr. DAVIES, at the Schools, between NINE a.m. and FOUR p.m. Sealed Tenders, endorsed "Tender for Warming Schools," to be enclosed to the Rev. C. DRANE, D.D. on or before the 1st of NOVEMBER next.

TO ROAD CONTRACTORS and OTHERS.

TENDERS are required for the CONSTRUCTION of about 1,350 yards of 9-inch, 12-inch, 18-inch, and 24-inch GLAZED DRAIN PIPES, and 1,200 yards of ROADS, on the High Broome Estate, Tunbridge Wells. The Tenders to be sent to Mr. THOS. THOMPSON, Surveyor, 2, Park-view, Grove-hill, where the plans and specification may be seen, on or before the 25th inst.

TO CONTRACTORS.—CLAYTON WATERWORKS.—CONTRACT No. 2.—The Local Board for the District of Clayton, near Bradford, Yorkshire, are prepared to receive TENDERS for the CONSTRUCTION and MAKING WATER-TIGHT of a RESERVOIR, to hold about 3,000,000 gallons; together with Valve Pit, Meter House, Boundary Walls, &c. situate at Little Moor, Clayton Heights, in the township of Clayton. Plans and specifications may be seen, and forms of Tender had, at the Offices of Mr. JAMES LUMLEY, Civil Engineer, 14, Kirkgate, Bradford, from THURSDAY, OCTOBER 28th, to SATURDAY, NOVEMBER 6th, both inclusive, from TEN a.m. to FOUR p.m. on each day. Tenders to be sent in, endorsed "Tender for Reservoir," to me, the undersigned, not later than FOUR o'clock in the afternoon of TUESDAY, NOVEMBER 9th, 1875. The lowest or any Tender will not necessarily be accepted, and no allowance made for Tenders.

BENJAMIN ASHTON, Clerk to the Board.

TO CONTRACTORS. — THETFORD WATERWORKS.—The Town Council of the borough of Thetford, in the counties of Norfolk and Suffolk, desire to receive TENDERS for the following CONTRACTS:—

CONTRACT No. 1.—For the Sinking and Boring of an Artesian Well.

CONTRACT No. 2.—For the Construction and Erection of a Brick Reservoir, Manager's Cottage, Engine Boiler and Coal Store House, with Chimney-shaft, Boundary-wall, and Entrance-Gates.

CONTRACT No. 3.—For the Supply and Erection of Steam Engine, Boiler, and Pumps.

CONTRACT No. 4.—For the Providing and Laying of Cast-iron Water Mains, Connexions, Hydrants, Bends, Valves, &c.

The respective drawings and specifications can be seen, and quantities and forms of Tender can be obtained, at the Offices of Messrs. JABEZ CHURCH & SON, 17a, Great George-street, Westminster, Civil Engineers. Copies of the drawings and specifications can also be seen at my Office. Tenders, sealed, and endorsed "Tender for Thetford Waterworks," must be delivered here on or before the 1st day of NOVEMBER next. The Council do not bind themselves to accept the lowest or any Tender.—By order,

JOHN HOUCHEN, Town Clerk.

Town Clerk's Office, Thetford, October 12th, 1875.

PARTNERSHIP.—An ARCHITECT of some years' standing, is desirous of meeting with a Gentleman as PARTNER. Premium expected.—Address, ARCHITECT, care of Mr. Northcroft, Surveyor, 37, Charing-cross.

THE Borough Engineer, of one of the healthiest districts within twenty miles of London, where extensive works in drainage, road-making, and irrigation, are in progress, will receive an OUT-DOOR PUPIL, with good references, at a moderate premium.—Address, L. H. care of J. M. Johnson & Sons, Limited, 3, Castle-street, Holborn.

WANTED, by an Architect, practising in a large watering place in the South of England, a competent ASSISTANT.—Address, sending photo, age, qualifications, and terms. There is also an opening for a YOUTH as PUPIL. Premium required.—Address, H. care of J. E. K. Cutts, esq. 28, Southampton-street, Strand, W.C.

MARBLE MASONS WANTED. None but first-class hands need apply. Good wages.—Apply to BURKE & CO. 17, Newman-street, Oxford-street, W.

SEVENOAKS LOCAL BOARD.—APPOINTMENT of SURVEYOR.—The Sevenoaks Local Board will, at their meeting, to be held on MONDAY, the 1st day of NOVEMBER next, proceed to the APPOINTMENT of a competent person to fill the office of SURVEYOR for their district, at the salary of 150*l.* per annum. The party appointed will be required to devote his whole time to the duties of the office. The district comprises an estimated area of 3,747 acres, and an estimated population of 4,250. Applications, in candidates' handwriting, stating age, present and past occupations and qualifications, with testimonials (not exceeding five) of recent date as to character and competency, must be sent to me, endorsed "Surveyor to Local Board," before the 1st day of NOVEMBER next.—By order of the Board,

GEORGE F. CARNELL, Clerk.

Sevenoaks, 7th October, 1875.

SURVEYOR of HIGHWAYS for the CHRISTCHURCH DISTRICT.—The Highway Board of the Christchurch District require the Services of a DISTRICT SURVEYOR, competent to maintain in good condition the Highways which the District is liable to repair, also to keep the accounts according to the forms furnished by the Board. The approximate mileage of the roads and other particulars may be learned by application to their Clerk. The annual salary is 100*l.* Two months' notice to be given in writing to determine the appointment. Applications, with recent testimonials of not more than six as to character and efficiency, to be delivered to Mr. H. PAIN, Christchurch, Clerk to the Board, before TWELVE o'clock at Noon, on MONDAY, the 25th day of OCTOBER instant. The Surveyor appointed will be required to give his whole time to the duties of the Office. Those candidates who are considered eligible will have notice to attend a subsequent Meeting of the Board.

Highway Board Room, 4th October, 1875.

H. PAIN, Clerk to Highway Board.

TWO good JOINERS, used to shop fittings, WANTED immediately.—Apply, 6, Princes-street, Cavendish-square.

TIMBER TRADE.—WANTED, a competent Man as CLERK. One who understands the trade.—Send full particulars, age, salary, &c. to T. N. E. Mr. Drewett, Stationer, High-street, Borough, S.E.

WANTED, a competent DRAUGHTSMAN, having a thorough knowledge of the construction of iron buildings, roofs, &c.—Address, stating age and salary required, to X. care of Messrs. J. F. Reid & Nephew's Advertisement Office, No. 14, George-street, Mansion House, E.C.

WANTED, a young Man, to ASSIST a SURVEYOR in Taking off Quantities, Abstracting, and Measuring Builder's Works. Also a YOUTH, as PUPIL or IMPROVER. Quick at figures, and able to trace drawings and square dimensions, &c.—Address, with references and terms, C. S. Surveyor, No. 7a, Whitehall-yard, S.W.

WANTED, UNDER-FOREMAN in a TIMBER YARD.—Apply to W. DRUCE & SON, 4, Swan-walk, Chelsea, S.W.

WANTED, in London, a good FOREMAN of PAINTERS. Must be energetic.—Address, with references and salary required, 97, Office of "The Builder."

WANTED, a FOREMAN, for Cartage and Contractor's Business, at New Wandsworth. Must have experience and a good character, and find security.—Address, H. No. 71, Queen's-road, Brighton.

WANTED, a very competent WORKING FOREMAN of CARPENTERS, in a first-class jobbing business. None need apply whose reference will not bear the strictest investigation.—Address, stating particulars and wages required, H. W. care of Mr. Nicholls, Stationer, Weston-street, Upper Norwood, S.E.

WANTED, in the country, for a large Job, a competent GENERAL FOREMAN. Carpenter by Trade. Must be thoroughly well up in the management of men, and the conversion of materials. If suitable, might be a constancy. Salary, 50*s.* per week.—Address, with copies of testimonials, C. A. H. Messrs. Nicholson & Co. 207, Upper Thames-street, London, E.C.

WANTED, by a London Firm, a good GENERAL CLERK. Must be well up in Prime Cost. State age and salary required.—Address, 96, Office of "The Builder."

WANTED, immediately, a CLERK used to Contractors' Books and Accounts, and who thoroughly understands Double Entry.—Address, SECRETARY, Val de Travers Asphalte Paving Company, 14, Palmerston-buildings, Old Broad-street, E.C.

WANTED, a good JOINER. One used to shop-fronts preferred.—Apply to A. PEACOCK, Builder, No. 283, Mayall-road, Herne-hill, S.E.

WANTED, a good ELECTRIC BELL-HANGER. Preference given to one who understands ordinary bell-hanging.—Address, No. 52, Office of "The Builder."

TO CARPENTERS AND JOINERS.

WANTED, a respectable Man, to TAKE the JOINER'S WORK in a shop. Piecework.—Apply, after Six p.m. to E. PRESTON, 15, Tachbrook-street, Pimlico, S.W.

WANTED, a competent MAN, who can do PLUMBING, PAINTING, and GASWORK, for Constancy, with prospect in time to take the trade himself. Good LABOURER WANTED.—Apply, by letter or otherwise, BUILDER, Burgess-hill, Sussex.

TO LEAD GLAZIERS.

WANTED, an experienced first-class Workman, for a CONSTANCY if suited.—Apply, stating terms, and giving reference to Messrs. SHRIGLEY & HUNT, Stained Glass Painters, Lancaster.

WANTED, in a Saw-mill, a respectable, steady Man, to WORK a FLITCH TIMBER-FRAME. Must be able to sharpen his own saws, and cut all hard woods. Wages, 2*l.* per week.—Apply to Mr. JAMES ROBERTS, 195, Shoreditch, opposite Great Eastern Railway.

WANTED, in a London Office, a respectable YOUTH, who can Trace well. Must write a good hand. Wages, 15*s.* per week.—Apply in first instance by letter, stating age, qualifications, and experience, to Mr. S. THORPE, 33, Gilbert-road, Kennington, S.E.

ORNAMENTAL GLASS PAINTERS WANTED.—Apply at 74a, Margaret-street, Regent-street.

FOREMAN WANTED, of first-class abilities, to Carry out the Building of a large Block of Offices in the City.—Address, with references, testimonials (copies only), salary, &c. R. F. S. care of Wm. Dawson & Sons, 121, Cannon-street, E.C.

CLERK WANTED, in the Office of an Architect, Surveyor, and Auctioneer. He must be an experienced man, and well up in dilapidations and assessing same. A permanent situation for a steady, trustworthy man. He must have undeniable references.—Address, stating age, salary required, references, and where last engaged, to SURVEYOR, care of Mr. Ellis, Builder, 40, Botolph-lane, Eastcheap, City.

BRICKMAKERS.—WANTED, an experienced MAN, who can undertake the ERECTION and MANAGEMENT of BRICKMAKING WORKS, in Egypt.—Address, in the first instance, FRANCIS J. STEWARD, 3, Victoria-street, Westminster.

AN OUT-DOOR FOREMAN WANTED to SUPERINTEND the ERECTION of IRON BUILDINGS and GENERAL IRONWORK.—Address, stating requirements, F. BEADY & CO. Limited, Victoria Works, Deptford.

WANTED, an ENGAGEMENT, as SHOP FOREMAN of JOINERS, or GENERAL FOREMAN of WORKS. Well up in construction and details. Has had experience in extensive works. No objection to the country.—Address, L. M. Post-office, North Finchley, London, N.

TO ARCHITECTS AND CONTRACTORS.

WANTED, an ENGAGEMENT, as ASSISTANT. Can trace and copy drawings, assist in measuring, take plans of houses, keep accounts, square dimensions, act as cashier, and in absence of principal. High references and moderate salary.—Address, B. B. May's Advertising Offices, 169, Piccadilly.

WANTED, by a practical Man, a RE-ENGAGEMENT as FOREMAN of BRICKLAYERS, or Piecework. Reference from present employers as to ability and sobriety.—Address, S. J. 1, Clark's-place, Hornsey-road, Holloway, N.

WANTED, as SHOP FOREMAN, a RE-ENGAGEMENT, by a PRACTICAL JOINER, Machinist, and Detail Draughtsman, who has worked systematically joiners and machinery in connexion, for the last sixteen years. Well up in construction, horticultural buildings, repairs, alterations, &c. Aged 43. First-class testimonials and reference.—Address, BETA, 16, Campden-street, Kensington, W.

WANTED, by a good plain HOUSE PAINTER, EMPLOYMENT, in or near London. Thoroughly experienced in the preparation of colours, and capable of taking the lead of a job. Unexceptionable references. Wages moderate.—Address, E. RUSSELL, 3, Albert-street, St. Leonard's-road, Bromley Middlesex.

WANTED, by a thoroughly-experienced MACHINIST, a SITUATION, to WORK MOULDING MACHINE, GENERAL JOINER, &c. Can make cutters, and do his own repairs if required.—Address, A. B. Milbanke Cottage, Westsquare, St. George's-road, Southwark.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN. Carpenter and Joiner by trade. Good reference. A job in the country preferred.—Address, JAMES HOLMES, 32, Speake-road, Clapham Junction, S.W.

WANTED, a RE-ENGAGEMENT as CLERK of WORKS, or GENERAL FOREMAN. A thoroughly practical Man, middle age. Joiner by Trade.—Address, A. S. 4, Belmont-street, Chalk-farm-road, N.W.

WANTED, a RE-ENGAGEMENT, by a thoroughly practical and energetic Man (carpenter and joiner by trade) a SITUATION, as GENERAL FOREMAN.—Address, S. E. A. 47, Hill-street, Peckham, S.E.

WANTED, a RE-ENGAGEMENT, by a JOINER, as WORKING SHOP-FOREMAN. Experienced in the conversion of materials and management of men. Thoroughly understands working from drawings. First-class references can be given as to character, &c.—Address, 69, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN of WORKS or JOB Carpenter and Joiner. Well up in all branches, setting out measurements, ground-work and water-work, extras, &c.—Address, SCALE, 22, Oval, Hackney-road, E

TO BUILDERS, &c.

WANTED, a RE-ENGAGEMENT, as WORKING FOREMAN (Plasterer). Experienced London workman; understands plain and ornamental plastering, and getting out working drawings. No objection to Town or country. Good references.—Address, H. T. 8, Belvedere-crescent, Belvedere road, Lambeth.

TO ARCHITECTS AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT, as CLERK of WORKS, BUILDER'S MANAGER, or GENERAL FOREMAN, by an energetic and practically-experienced man. Understands taking out quantities, making working drawings, measuring, and estimating, &c.—Address, ALPHA, 33, Islip-street, Kentish-town, N.W.

WANTED, a RE-ENGAGEMENT, as FOREMAN, or WORKING FOREMAN of MASONS. Has had considerable experience in church work, or would Take Charge of a Yard or Job, where a practical knowledge of mason's work is required. Good references.—Address, S. M. 10, Beecher Cottages, Philip-lane, Tottenham, N.

TO QUANTITY SURVEYORS.

WANTED, a SITUATION as CLERK, in the Office of above. Good references.—For further particulars apply, W. T. 15, Southampton-buildings, Holborn, W.C.

TO PLUMBERS AND BUILDERS.

WANTED, a SITUATION or JOB, by an experienced PLUMBER. Can turn his hand if required. Good reference.—Address, D. W. G. 25, Brayard's-road, Albert-road, Peckham-rye.

TO PLUMBERS AND BUILDERS.

WANTED, a SITUATION, by a thoroughly good PLUMBER and GASFITTER. Can turn his hand to other branches if required. Good references.—Address, A. B. No. 49, Rupert-street, Haymarket.

TO BUILDERS.

WANTED, a SITUATION, as FOREMAN, by a thoroughly experienced Carpenter and Joiner. Apt to master details of a business, and make good use of machinery. Address, 94, Office of "The Builder."

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WANTED, a SITUATION, by a good PAINTER and PAPERHANGER (plain and decorative), as a WORKING FOREMAN, or a JOB, in town or country. Twenty years' experience. Terms moderate.—Address, C. G. B. 30, Great Quebec-street, Marylebone-road, W.

WANTED, by a young Man, a SITUATION, as PLUMBER and GASFITTER. Understands well work.—Address, J. B. 71, Tavistock-road, Notting-hill, W.

WANTED, by a young Man, a SITUATION, as YARD FOREMAN. Understands Hoffman's Patent Kiln. Nine years' experience. Four years' character from last place.—Address, G. C. 96, Sandling-road, Maidstone.

TO BUILDERS AND CONTRACTORS.

WANTED, by a young Man, aged 26, a JOB, as TIMEKEEPER, &c. Carpenter by trade. Good experience with London firms.—Address, J. G. 13, Hornsey Park-road, Hornsey.

WANTED, by a young Man, aged 21, a SITUATION in an ARCHITECT'S or BUILDER'S Office. Can make drawings from rough sketches, take off quantities, measure up work, and a knowledge of book-keeping, single entry. Five years' experience, two in a Joiner's shop.—Address, 40, Office of "The Builder."

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